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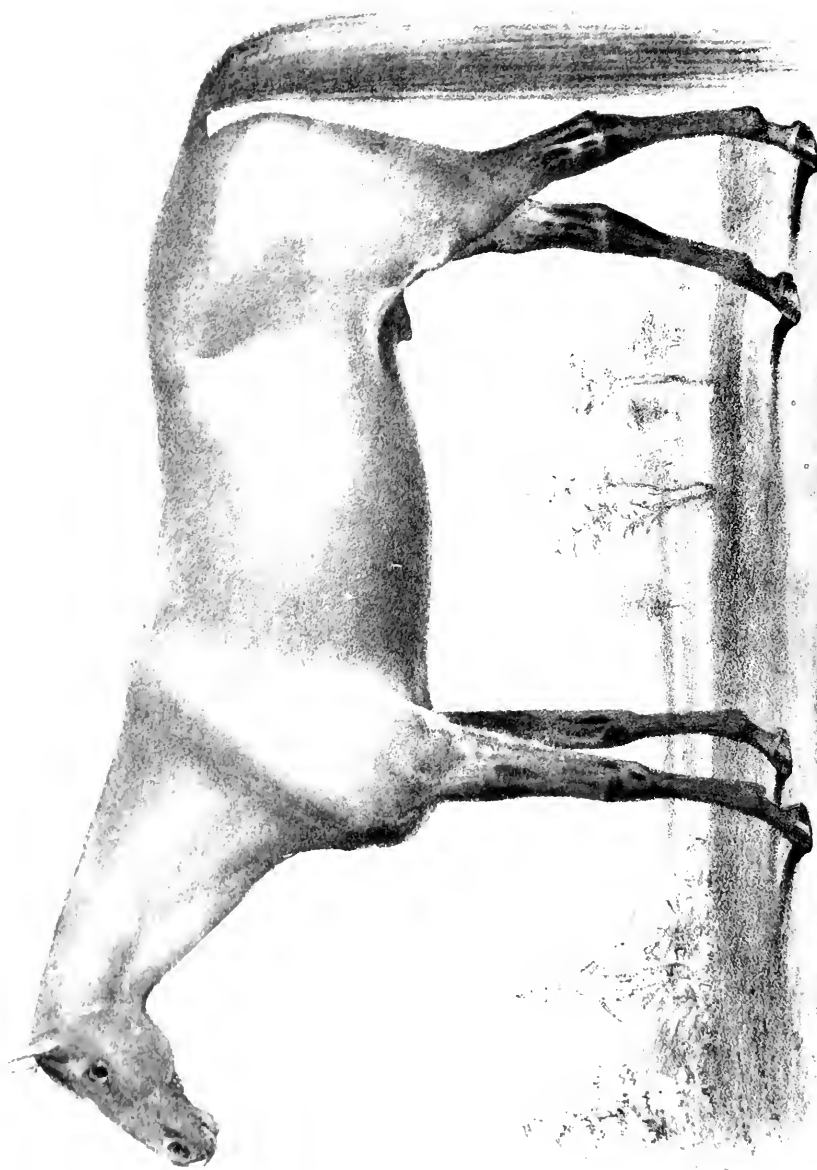
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THE
FARMERS' LIBRARY
AND
MONTHLY JOURNAL OF AGRICULTURE.
VOLUME II.



N. Y. SANFORD, 1846.

Published by the Publisher, N. Y. Sanford, 1846.
HAMPDEN
SUPERIOR W. AND G. L. L. OF LEVANT, N. Y.



AYRSHIRE BULL GEORDIE.

1876

See also "The Ayrshire Bull" in the "Ayrshire Bull" series, by Sir John Lubbock.

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THE
MONTHLY
JOURNAL OF AGRICULTURE,

CONTAINING

THE BEST CURRENT PRODUCTIONS IN PROMOTION OF AGRICULTURAL IMPROVEMENT,
INCLUDING THE CHOICEST PRIZE ESSAYS ISSUED IN EUROPE AND AMERICA.

WITH

ORIGINAL CONTRIBUTIONS FROM EMINENT
FARMERS AND STATESMEN.

JOHN S. SKINNER, EDITOR.

VOLUME II.

(JULY, 1846, TO JUNE, 1847, INCLUSIVE.)

NEW-YORK :
GREELEY & McELRATH, TRIBUNE BUILDINGS.

1847.

MONTHLY JOURNAL OF AGRICULTURE.

VOL. II.

JULY, 1846.

NO. 1.

THE N. Y. STATE CATTLE SHOW AND FAIR FOR 1846

WILL BE HELD, UNDER THE AUSPICES OF THE STATE SOCIETY, AT AUBURN, ON THE
15TH, 16TH AND 17TH OF SEPTEMBER NEXT.

WE have not space at command for all the details. The list of Premiums does not appear to vary materially from that which has for many years been offered, and with which the public is familiar.

ON FARMS.

For the best cultivated farm of not less than 50 acres, exclusive of woodland, regard being had to the quantity of produce, the manner and expense of cultivation, and the profits:

First premium.....\$50 | Second do.....\$30 | Third do.....\$20

The persons making application for these premiums must submit written answers to a series of questions, printed copies of which may be obtained on application to J. B. Nott, Secretary.

EXPERIMENTS AND ESSAYS.

For the most satisfactory experiment of stall-feeding cattle, with a full detail of all the circumstances....\$20

For the most satisfactory experiment in converting green crops or other vegetable matters into manure, with full details, &c..... 10

For the most satisfactory experiment made for increasing manures in forming compost..... 10

~~~~~ " " " for top dressing grass ..... 10

~~~~~ " " " subsoil plowing ..... 10

~~~~~ " " " eradicating Canada thistle..... 10

~~~~~ " " " draining..... 10

~~~~~ " " " irrigation..... 10

~~~~~ " " " on the improvement of seed wheat, by culture and propagation.. 10

FARM DWELLINGS.

For the best design, accompanied with plans and elevation, combining convenience, economy, and good taste: For best.....\$15 | Second best.....\$10

Competitors for the premiums on Experiments and Designs must forward their manuscripts to the Secretary, Albany, previous to the 1st of December, 1846, free of postage.

Next on the list come the Premiums offered for CATTLE, which, by the trustees or Committee for offering Premiums, are *classified* in the following order: 1. Durhams; 2. Herefords; 3. Devons; 4. Ayrshires; 5. Crosses of Native and Improved; 6. Native.—Then come other descriptions of Cattle for which premiums in money, (\$15 being the highest amount,) and Volumes of the Transactions of the Agricultural Society of New-York are offered. These other cattle are *working-oxen, three year-old steers, two year-old, do., yearling steers, and fat cattle, and fat sheep.*

In Massachusetts it would seem that cattle are not valued according to the preceding classification, but how far this difference in the estimation of the farmers of the two States is to be referred to corresponding differences of circumstances, such as pasturage and food, and the uses and objects for which cattle are reared—as, for instance, more in one State and less in the other, for the pail, the yoke, or the shambles—we cannot undertake to say.

There, in Massachusetts, that ancient society suspended their exhibitions for a time, and appropriated their funds to the importation of Devons and Ayrshires.

The next premiums on the list are for HORSES—in the following order: STALLIONS—The best one for all work, for blood, draught, three year-old stallions, geldings, matched horses, and mares. It is to be presumed that the exhibitor for the premium for best gelding and matched horses, at least, is required to be also the breeder of them; for surely, there could be no great mer-

it, except that of luck and a long purse, in getting possession of the best of these. Such horses have been exhibited on some occasions, by professional horse dealers taking the premium; and being sold under the prestige of that, have very soon after proved unsound.

When they have been bred and reared by the farmer, who exhibits them, they are living witnesses of his having paid attention for a length of time to that branch of rural economy; but even that is not to be indiscriminately encouraged, as not being economical in all cases.

SHEEP.—This animal of so much real importance, as connected with individual profit and national independence, comes next on the list; and the premiums are offered for the best long-wooled, middle-wooled, (which includes the "South-Down, Norfolk, Dorset, Native, &c.") Merinoes and their grades, and Saxons and their grades. Next come the premiums for

SWINE.

| | | | |
|--|----------------|------------------|----------------|
| Best boar, over 10 months..... | \$10. | Best sow..... | \$10. |
| Second best..... | Colman's Tour. | Second best..... | Colman's Tour. |
| Third best..... | Diploma. | Third best..... | Diploma. |
| Best lot of pigs under 10 months, not less than four in number. Colman's Tour. | | Second best..... | Diploma. |

In awarding premiums on hogs, reference will be had not merely to size or present condition, but to that proportion between bone and meat which promises the greatest value from the least amount of feed.

Except that with his \$10, the winner of the first prize could buy two sets of COLMAN'S Report, the "second best" would in this, as in all other like cases, get the better prize of the two. If he could not have both, where is the father of true spirit and discernment who would not prefer to give his son the *book* rather than the *money*?

Then follow the premiums for best **POULTRY**: \$3 each for best lot of *dorkings*, black *Polands*, large fowls, ducks, geese, and lot of "best and greatest variety of barn-door fowls, owned by the exhibitor."

Next, and more useful than any that precedes, is the following:

FARM IMPLEMENTS.

| | | | |
|-----------------------------|--------------------|---------------------------------|-------------|
| Best plow*..... | Silver medal. | Second best straw cutter..... | Diploma. |
| Second do..... | Diploma. | Third do..... | Vol. Trans. |
| Third do..... | Vol. Transactions. | Best corn and cob crusher..... | \$10. |
| Best subsoil plow..... | Silver medal. | Second do..... | Diploma. |
| Second do..... | Diploma. | Third do..... | Vol. Trans. |
| Third do..... | Vol. Trans. | Best clover machine..... | \$10. |
| Best farm wagon..... | Silver medal. | Second do..... | Diploma. |
| Second do..... | Diploma. | Third do..... | Vol. Trans. |
| Third do..... | Vol. Trans. | Best flax and hemp dresser..... | \$10. |
| Best harrow..... | Silver medal. | Second do..... | Diploma. |
| Best cultivator..... | Silver medal. | Third do..... | Vol. Trans. |
| Best fanning mill..... | Silver medal. | Best horse-cart..... | Diploma. |
| Second do..... | Diploma. | Best ox-cart..... | do. |
| Third do..... | Vol. Trans. | Best horse-rake..... | do. |
| Best horse power..... | Silver medal. | Best ox-yoke..... | do. |
| Second do..... | Diploma. | Best farm-harness..... | do. |
| Third do..... | Vol. Trans. | Best saddle..... | do. |
| Best corn-stalk cutter..... | Silver medal. | Best grain-cradle..... | do. |
| Second do..... | Diploma. | Best six hand-rakes..... | do. |
| Third do..... | Vol. Trans. | Best six hay-forks..... | do. |
| Best threshing machine..... | Silver medal. | Best six grass-scythes..... | do. |
| Second do..... | Diploma. | Best six cradle-scythes..... | do. |
| Third do..... | Vol. Trans. | Best six dung-forks..... | do. |
| Best drill barrow..... | Diploma. | Best six axes..... | do. |
| Best straw cutter..... | Silver medal. | Best six hoes..... | do. |
| Best hay rigging..... | | | \$5 |

* The trial of plows will take place on Tuesday, September 15th.

For the best and most numerous collection of agricultural implements.....\$10
Also, for the best and most numerous collection of agricultural implements manufactured in the State of New-York, by or under the supervision of the exhibitor.....Silver medal.

The **PLOWING-MATCH**, which always proves a very interesting point in the exhibition, is thus provided for and regulated.

PLOWING-MATCH.

| | | | |
|--------------------|------|--------------------|--------------------|
| First premium..... | \$15 | Third premium..... | \$10 |
| Second do..... | 12 | Fourth do..... | Colman's Tour. |
| Fifth premium..... | | | Vol. Transactions. |

For boys under eighteen years of age.
First premium.....\$10 | Second.....\$5 | Third.....Vol. Transactions.
One-fourth of an acre will be required to be plowed within an hour and a quarter, with fifteen minutes for rest—the furrow-slice to be not over 12 inches wide, nor less than 8 inches in depth. The plowman to drive his own team, and the furrow-slice to remain as left by the plow.

BUTTER.—On this part of the exhibition the trustees appear to have bestowed particular care, properly deeming it a branch of economy deserving in this State peculiar attention. Steamboats and railroad facilities have given it great extension since 1839, when the dairy products of the State were valued at ten and a half millions of dollars.

We should not copy all the regulations laid down for competitors in this instance, but that they may afford useful hints for other societies and occasions.

BUTTER.

For the best lot (quality as well as quantity considered), made from five cows, in 30 successive days—25 lbs. of the butter to be exhibited. . . . \$55
 Second best. . . . \$15 | Third best. . . . \$10

Compliance with the following rules will be strictly required of those who compete for these premiums, viz:—The cows to be fed on pasture—green corn-stalk fodder, or grass cut for the purpose, only. No grain, roots, or slops, of any description, to be fed during the trial, nor for fifteen days preceding the trial. The cows to be owned by the competitors previous to the 1st day of February, 1846. The milk drawn from the cows on some one day during the trial to be accurately weighed and measured, and the result stated. A sample of at least 25 lbs. of the butter so made to be exhibited at the fair at Auburn, for the inspection of the examining committee. The particular breed of the cows to be stated, if known, and the method of making and preserving the butter. A certificate signed by the owners of the cows, and at least one other person who assisted in milking and making the butter, detailing the above particulars, will be required.

The executive committee believe that few if any premiums offered on neat cattle will result in greater benefit to the farming interest than those on the products of the dairy, providing fixed rules, requiring uniformity of feed, be faithfully enforced. The increased list of premiums is offered with the hope that it will induce extensive competition throughout the State. Let this object be accomplished, and an opinion, approximating to accuracy, may be formed by the public which of the several breeds of cows are the best for dairy purposes; and, from those that prove the best, further improvement may be made.

| | | | |
|---|--------------------|-----------------------|---------------|
| Best 25 lbs. made in June | \$10 | Second best | Colman's Tour |
| Second best | Colman's Tour. | Third best | Silver medal. |
| Third best | Vol. Transactions. | Fourth best | Diploma. |
| Best 50 lbs. made at any time | \$15. | Fifth best | Vol. Trans. |

The claimants for premiums must state in writing the time when it was made; the number of cows kept on the farm; the mode of keeping; the treatment of the cream and milk before churning; the mode of churning, winter and summer; the method of freeing the butter from the milk; the quantity and kind of salt used; whether saltpetre or any other substances have been employed.

The butter offered for premiums must be presented in butter tubs, jars, or firkins.

CHEESE.

One year old, and over.

| | | | |
|-----------------------|----------------|-----------------------|--------------------|
| Best 100 lbs. | \$15. | Third best | Silver medal. |
| Second best | Colman's Tour. | Fourth best | Diploma. |
| | | Fifth best | Vol. Transactions. |

Less than one year old.

| | | | |
|-----------------------|----------------|-----------------------|--------------------|
| Best 100 lbs. | \$15. | Third best | Silver medal. |
| Second best | Colman's Tour. | Fourth best | Diploma. |
| | | Fifth best | Vol. Transactions. |

Those who present cheese for the premiums offered must state, in writing, the time when it was made; the number of cows kept; whether the cheese was made from one, two, or more milkings; whether any addition is made of cream; the quantity of rennet used, and the mode of preparing it; the mode of pressing, and the treatment of cheese afterward.

DAIRIES.

| | | | | | |
|-------------------------------------|------|-----------------------|------|----------------------|------|
| For the best cheese dairy | \$50 | Second best | \$30 | Third best | \$20 |
|-------------------------------------|------|-----------------------|------|----------------------|------|

B. P. JOHNSON, of Rome, Oneida Co., Chairman.

| | | | | | |
|-------------------------------------|------|-----------------------|------|----------------------|------|
| For the best butter dairy | \$25 | Second best | \$15 | Third best | \$10 |
|-------------------------------------|------|-----------------------|------|----------------------|------|

ZADOCK PRATT, of Prattsville, Chairman.

The competitors for the above premiums must comply with the following regulations:—They must state the actual product of the cheese or butter dairy; the locality of such dairy in latitude; the composition of the soil, as near as may be, where the dairy farm is situated; the kind of grass used for pasture and for hay; the quantity, in pounds, of milk per cow on the average and in the aggregate; the quantity of cheese or butter to the hundred pounds of milk produced; the gross quantity of milk and cheese, or butter, produced; the quality of the cheese or butter; the method of making; the breed of cows composing the dairy; and all such other details procured as shall determine the most profitable mode of conducting the cheese or butter dairy business.

Premiums are next offered for maple sugar, silk and domestic manufactures, fruit and flowers, vegetables, and the following:

MISCELLANEOUS.

| | |
|---|---------------|
| Best iron gate for farm purposes | Silver medal. |
| Best ornamental cast-iron vase, on pedestal | Diploma. |
| Best sample drain tile | Diploma. |
| Best quarter of an acre of osier willow, and the best specimens manufactured from the product | \$8. |
| Best specimen wire hurdle fence, to be accompanied with an account of cost | Silver medal. |

DISCRETIONARY PREMIUMS

Will be awarded for—

1. Stoves and other manufactures of Iron.
2. Paintings and drawings.
3. Ornamental shell, needle, and wax work.
4. Implements and machinery.

Also, for all such other articles and products, not enumerated above, as shall be deemed worthy of encouragement.

The next premiums on the list are for the best FIELD-CROPS—as wheat, Indian corn, barley, rye, oats, potatoes, sugar-beets, mangel-wurzel, ruta-baga, carrots, and peas; and here it is to be noted with pleasure that the trustees say, "it is understood the above premiums are to be awarded for crops raised in the usual cultivation of the farm—to include the entire crop raised in each case."

It is not intended to offer premiums for crops raised on small parcels of land, by unusual manuring and cultivation.

Premiums are also offered for best acre of corn for fodder; best acre of hops; best half-acre of flax, ditto of tobacco; best acre of cabbage, of broom-corn, of clover-seed, and timothy-seed. And by what follows, it may be inferred that suspicions have been entertained that premiums have been obtained by trickery and unfair management. Those, in fact, who have attended such exhibitions with an observant eye, must have perceived that there is a little too much management, or attempts at it, in the appointment of the judges on the ground, when those originally nominated fail to attend, and a little too much of personal importunity when they are on duty. It is to be regretted that in too many cases, men of supposed influence and popularity are appointed, for the sake of paying them the compliment, without ascertaining whether they will really serve or not; and when the day of exhibition arrives, the judges are nearly all to be appointed over again, and by chance, oftentimes, at the suggestion and by the indirect management of the most eager and active competitors; and the natural consequence is, that the result gives dissatisfaction and disgust—doing more harm than good.

These shows are too frequent, and too much is attempted to be done with inadequate means and in too short a time.

The cultivation and display of fruits and flowers, for example, should be encouraged by the institution of separate societies—horticultural societies for that special object, as at Boston. It should constitute an enterprise to itself, and is worthy of the separate and earnest devotion of men of taste and liberality. But we must return to the subject immediately in hand. Proceeding with the list of premiums, the trustees say:

Those who present claims to premiums for farm crops must state, in writing, the following particulars:—The condition of the soil at the commencement of cultivation for the crop; the previous crop and cultivation, and quantity of manure used upon it; the quantity and kind of manure the present season; the quantity and sort of seed used; the time and manner of sowing, cleaning and harvesting the crop; the amount of the crop, determined by actual weight or measurement; and the expense of cultivation. The land shall be measured by some surveyor, who shall swear to the correctness of his survey, and that it was made with a chain and compass; and the claimant of the premium, with two other persons who assisted in measuring, shall certify under oath as to the quantity produced from the piece of land mentioned in the certificate of the surveyor; and a sample of grain shall be presented at the annual meeting, with the oath of the applicant that the same is a fair sample of the whole crop.

The statements required from those who compete for the premiums on farms and field crops must be sent to J. B. NORR, Recording Secretary, Albany, previous to the 1st of December, 1846; and the premiums will be awarded at the annual meeting of the Society on the third Wednesday of January.

N. B.—Plate will be substituted for money, on the application of the persons receiving the premium.

PRÉMIUMS FOR 1847—1848—1849.

Whereas, The Agricultural Society of the State of New-York has not an experimental farm; and whereas, to some extent, satisfactory experiments can be made by intelligent farmers on their own farms: therefore,

Resolved, That the undermentioned list of premiums be offered to induce public spirited individuals to lend their valuable aid in extending the boundaries of accurate rural knowledge.

Three premiums will be awarded of \$30, \$20, and \$10, in January, 1848. For the best experiment upon a herd of not less than 8 cows, to determine the relative advantages of soiling, or depasturing milch cows. The experiment to be conducted as follows:

1. The experiment must commence on the first day of May, and be continued until the first day of November.
2. The cows to be divided in two lots of 4 each. One lot to be soiled, the other depastured. Before commencing the experiment, each lot must be weighed, and the record of the weight returned to the committee. It is necessary that the two lots shall be as near alike in weight and milking properties as possible.
3. The milk of each lot to be weighed separate daily.
4. The manure made from those soiled to be ascertained in cords.
5. An account to be kept of the expense of soiling; also, a detailed statement of the entire management, together with the measurement of the land occupied in soiling; and each to be returned to the committee.
6. A description and measurement of the land occupied for pasture also to be made.
7. Each lot to be weighed at the conclusion of the experiment.

For the best experiment, to be continued through three crops, to ascertain in bushels of grain, and weight of stalks or straw, the actual value of manure to a farmer. The experiments to be conducted as follows, viz:

1. Three contiguous acres of ground shall be selected.
2. One acre of which shall be manured with not more than ten cords of common barn-yard manure the first year, and plowed under. The second acre to be manured with fermented or composted manure, to be applied in any manner the experimenter chooses; but a full account of the mode is to be made, and the manner of application. Also, an accurate account of the cost of the material and its application.
3. The three acres are to be planted with corn the first year; the second to be sowed with barley or oats; the third crop to be winter grain. An accurate account of the yield of each crop to be kept.
4. A full account of the whole management, and all the details respecting the culture and the circumstances affecting the crop.
5. The several kinds of soil to be particularly described, and specimens transmitted to the State Society for analysis before commencing the experiment—and also at the conclusion of the experiment—discriminating carefully between each acre.

For the best,\$40 | Second best,\$30 | Third best,\$20

N. B.—The specimens of soil to be selected for analysis must be taken from the surface in different parts of the acre. Where the acre is green sward, the sample must be taken just at the termination of the roots

of the grass. Specimens should also be selected from the depth of seven or eight inches—at all events, immediately below the usual depth to which the plow runs. The specimens of soil must in no case be mixed, and should consist of about 1 lb. sewed in a cotton bag.

\$20 will be paid, at the annual meeting of the Society in 1848, to the person who will make the most satisfactory agricultural experiment—accuracy and the importance of the experiment to be taken into consideration. A full detail of the experiment and its results must accompany the application.

For the best managed entire flock of sheep of not less than 100, to be awarded at the annual meeting in 1848 :
 Best.....\$30 | Second best.....\$20 | Third best.....\$10.

The applicant for these premiums will be required to furnish the Society with the following information, viz :

1. The kind and quantity of food, and its value.
2. The quantity and quality of wool : this to be determined by its being submitted to the stapling of some respectable manufacturing establishment, whose certificate shall accompany the application for the premium.
3. The number of the increase.
4. Kind of sheep, and the number of ewes, wethers and bucks.
5. The value of sheep when fattened, and the value of lambs for the butcher.

CHASE'S CARD-SPINNER.

AMONG the articles exhibited at the late National Fair, we are much pleased to know none attracted more attention, nor met with more approbatory notice than this late invention of Mr. Chase, for covering cotton-yarn with a complete coating of wool, so as to make a cloth which cannot be distinguished from one entirely made of wool. The machine was inspected by many persons well acquainted with mechanics, and by manufacturers, all of whom, we understand, expressed great satisfaction at the manner in which it operated, and appeared convinced that it would prove very useful, and cause a great saving in the production of a valuable material for hosiery, and clothing for the working-man.

There were several specimens of cloths and linseys made from the yarn spun by this machine, and their appearance and texture were highly satisfactory to all who examined them. Some carpets that were also made from the same material, were greatly noticed and much remarked upon, as possessing a thickness and solidity much greater than any ingrain carpeting made entirely of wool, while the patterns and finish were beautiful.

But what makes this machine peculiarly interesting to the readers of this Journal of American Agriculture is, that it must produce such a saving in the family manufactures of our planters and agriculturists, from the capacity it possesses of working up both cotton and wool of inferior value, and of requiring so little useful labor to accomplish it.

We cannot better conclude this notice than by giving the following quotation from the "American Journal of Improvement and Mirror of the Patent Office," and the accompanying certificate from Hon. DIXON H. LEWIS :

The American Journal of Improvement in the Useful Arts, and Mirror of the Patent-Office, a monthly paper, published at Washington, contains the following notices of said machine and exhibition, including a letter to the editor of that journal from Hon. Dixon H. Lewis, Senator of the United States from Alabama, whose opinion on all subjects is entitled to the highest respect :

"Of all the improvements and inventions of modern times, there is, perhaps, none of more importance to the southern planter and northern manufacturer than Chase's Patent Card-Spinner, of which machine Mr. George Law, of Baltimore, is the proprietor. It is intended for the fabrication of an entirely new article, by enveloping a cotton thread in a woollen fibre, making a thread of superior strength to one of the same diameter of all wool, and will entwine from one to four threads of cotton, flax, or other yarn (twisting them into one thread,) covered with wool. The goods manufactured of this material possess all the warmth of woollen cloth, with greater durability, and, in consequence of the principal material used (cotton) being so much cheaper than wool, they can be made at a far less cost than an article composed entirely of wool.

"The machine is very simple in its construction, and, being made principally of cast-iron, will only require a renewal of the cards occasionally.

"At one operation, it cards the wool and envelops the cotton-yarn in a woolen integument, strongly entwined around it, in larger or smaller quantities, according to the species of goods intended to be made, at the wish of the operator, preparing the yarn for the manufacture of a substitute for all woolen goods, from a light flannel to a heavy blanket."

WASHINGTON, February 25th, 1846.

"Sir: I have witnessed the operation of Chase's Patent Card-Spinner, for enveloping cotton, hemp, or flax, with wool, and am convinced that the machine will give a thread much stronger than one made with wool in the ordinary way, and equally as warm, without showing anything else than the wool. The fabrics I have seen are, I would suppose, stronger than all wool, and as strong as cotton, possessing the warmth of one with the durability of the other.

"I should suppose such a machine could be introduced to great advantage in private families in the South, and can be operated easily by two very ordinary hands.

"To the Editor of the American Journal, &c."

DIXON H. LEWIS.

We add our recommendation to these testimonials, fully believing our large planters and farmers will find it much to their interest to possess themselves, at a small expense, of a machine which will soon much more than pay for itself by the saving in cost its various products for clothing, carpeting, &c., which have met with so much approbation from those who are well skilled in the value of such articles.

Mr. GEORGE LAW, of Holling-street, Baltimore, is the proprietor, from whom every particular can be ascertained.

VARIOUS USES TO WHICH CORN AND CORN MEAL ARE APPLIED.

[Communicated for the Farmers' Library.]

FINE food, in all its stages, and in any way of preparation, for horses, cattle, hogs, sheep, poultry, &c. &c.

Its stalks make fine sugar.

The grain makes excellent whisky.

It is a delightful vegetable in its green state, and when used as such is called "roasted ears," or it may be boiled, then trimmed from the cob and mixed with butter, salt, and pepper—and oh, how delicious!

It makes a nice pudding.

When hard, it is pounded so as to crack the grains and get off the husks, and then boiled, makes *hominy*.

If half ground in a mill, it is then delightful as *small-hominy*.

Great-hominy may be eaten warm, with butter, or cold with milk or fat bacon; or, it can be fried with bacon or lard, and makes a nice dish if properly fried.

Small-hominy, after being boiled, can be made into small cakes and *fried*, and is very nice.

Parched corn is good to quiet hunger, and has served often our starving soldiers, when they gained the liberties of this free land we are now so proud of.—When ground into meal, it is used in every variety of mode, and after every fashion: for instance—mush, crush, *dodger*, fried-mush, fried-bread, ash-cake, fat-cake, hoe-cake, baker-cake, journey-cake, thin journey-cake, crackling journey-cake, corn-dumpling, griddle-cake, pone, light-pone, mush-pone, short-cake, muffin, egg-pone—improves buckwheat cakes—is mixed with rye and wheat flour, and improves both.

Of the above modes I can furnish recipes if deemed necessary.

[Pray, good friend, let us have them all—it can do no harm, "any how."

Ed. Farm. Lib.]

INDUSTRIAL RESOURCES OF THE SOUTH AND SOUTH-WEST.

CHARACTER, HABITS, AND MANAGEMENT OF SOUTHERN PLANTERS....NOTES ON THE LONG-LEAF PINE....TAR AND TURPENTINE INDUSTRY OF NORTH CAROLINA DESCRIBED....SALT NOT ADAPTED AS A MANURE TO CANE-FIELDS....LETTER FROM GENERAL EDMUND P. GAINES.

IN other places, and under various guises, have been already published some of the scattering fruits of personal observation among, and of correspondence established with intelligent land-proprietors and others, in the South and South-West, while on a jaunt in early Spring as far South as Charleston, Savannah, Milledgeville, Macon, Columbus, Montgomery, Mobile, and so on to New-Orleans, and along "the coast" to Natchez; returning thence by the way of Augusta and Columbia, to "the place of starting."

It is reported of Talleyrand, that on being chided by a lady for passing without recognizing her, he at once replied—"Ah! madam, if I had stopped to look at you, I never could have passed!" Now we recommend to all men of taste and sensibility, who have any inkling for good company and good cheer, and who have any claim to the hospitalities to which we had so little, if they would make progress on their journey, not to halt at the charming places we have mentioned—charming emphatically at that season of the year, for a Northern man, when in his own region "grim-visaged Winter" is wont to "linger in the lap of Spring"—while there, impatient of delay, he decks himself in flowers and sallies forth even in February to dance upon the green and bask in the genial sunshine.

Two months have passed this day (June 3d), since, at the sumptuous table of a friend in Mobile, supplied and served in the good old Virginia style, we met that great luxury of the garden, strawberries, which have just now made their appearance in like abundance in New-York. The splendid Cherokee rose-vine was already growing over the tops of the locust-trees.

But our purpose is to note what we could see or hear of, touching the *great staples* of Southern Agriculture, and here we may as well at once remark, that on few subjects does there exist so much delusion in the North, as in reference to the habits and character and management of the Southern Planter. We do not propose at this time to go into any extended remarks on these points, because as yet we are not fully prepared with our facts; but let him who would form a judgment go and see for himself, and converse with them as we did in the social and public circle, and if we are not egregiously deceived, he must admit that they are nowhere to be excelled for that enlarged knowledge of the true principles of good husbandry, which has been gained not alone from books, but yet more from eager and sagacious inquiry and conversational intercourse, and from that best of all books, experience, in the resolute and skillful and industrious, yes, eminently industrious, management of their own estates, whatever may be thought or said to the contrary.

Let the amateur or the connoisseur who would enjoy that most beautiful of all prospects, large estates well and neatly managed, go and take a look at the rice plantations in Georgia, and the cotton plantations of South Carolina and farther south—such for instance, as Col. Singleton's estates, wide in extent, and yet so much wider in renown for beauty and excellence of appearance and manage-

ment under his own direction—or at the estates of Col. Hampton near Columbia, where one may, with one *coup d'œil*, look over some 1500 acres in a single field, and that the very first in which cotton was planted as a field crop; so level and clean that a large black snake, or “horse-runner,” might be seen crawling over any part of it; and yet so carefully and judiciously *drained* as to bear upon its surface not a quart of stagnant water. Ditches without a clod to obstruct the flow of water or a bush to disfigure their borders, and throughout the whole estate of several thousand acres, roads as well constructed and in as perfect order as if they had been just handed over as finished work from the hands of a corps of Uncle Sam’s engineers. It is here worthy of being noted, for example’s sake, that on these estates the clearing out and repairs of roads and ditches constitute a part of what is called the “task” for the slaves, which is really a light one as compared with the customary hours of field labor in Europe. In this way roads and ditches and fences are all kept in order with as much punctuality as the adjacent cultivated fields. It is in view of such management and perfection of work that every one must be struck with the superior results of labor fully fed and clothed, and skillfully directed; showing by comparison, the efficiency of well trained regulars over volunteers and raw militia, as would probably be illustrated by any calculation which should exhibit a fair account of profit and loss. We are relating facts, not discussing principles. But we must “try back” for the present to the old North State for a view of the Tar and Turpentine business, as it was that which first and most forcibly attracted attention in a series of objects, with which, by personal observation, we had been theretofore almost altogether unacquainted. The following description of this branch of industry is the redemption of a promise exacted by us on the spot, in the woods, the precise theatre of the experience it so kindly and fully details, and is the article referred to in our last as being then not in hand.

We are in daily hope and eager expectation of a paper on *rice culture* from one of the best and most accomplished Planters near Savannah.

NOTES ON THE LONG-LEAFED PINE.

(*Pinus Palustris*. L.)

THIS species was originally described under the above name by Linnæus, (Sp. Vol. IV. p. 449.), and was thus characterized—

“Leaves in threes, very long; cones nearly cylindrical, muciculate, stipules pinnatifid, rementaceous, persistent.”

It was subsequently described under the same name by Walter, Michaux, the elder, by Pursh and Nuttall. In the North American Sylva, the Forest Trees of North America, by F. Andrew Michaux—Vol. III. p. 133, pl. 6—this species is again described and figured under the name of *Pinus Australis*. The whole description of the specific character, as well as the valuable properties of the Long-Leafed Pine, is deserving of a careful perusal.

In Ellicott’s Botany, Vol. II. p. 637, this species is again described with great accuracy. He restored the original name of Linnæus, viz., *Pinus Palustris*, although it is inapplicable and somewhat unfortunate, as it is not found on low marshy lands, but is almost invariably confined to dry, sandy soils, where there is a subsoil of clay. It abounds on all the high, and consequently dry Pine barren lands of South Carolina, within 110 or 120 miles of the Ocean. In the moist or fertile lands, the subsoil Pine (*Pinus Teda*) is found most abundant and at some distance from the sea-coast; the Pitch, or Virginia Pine (*Pinus Regida*) takes its place.

This species does not differ in any particular from that of North Carolina, which has proved a source of so much profit to the inhabitants. It possesses the same resinous properties, and yields them in equal abundance. Tar and Resin were formerly articles of exportation in South Carolina, although to a limited extent. Very recently several enterprising individuals have engaged in this business in South Carolina. We were afforded opportunities of inspecting the ar-

tie as brought to the Charleston market. It appeared to us as fully equal to that procured in North Carolina, and we have no doubt will add considerably to the other resources of the State.

THE TAR AND TURPENTINE BUSINESS OF NORTH CAROLINA.

BY JOHN MACLEOD, OF JOHNSTON.

THE Long-Leaf or Straw Pine of the Southern States of the North American confederacy, affords a most interesting subject of contemplation to him who delighteth in reflecting on Nature's wisdom and laws—and to him, also, who looketh forward to a period of time when the Navies and Commerce of the different nations of the Earth—the arts, wants, and comforts of Mankind may be deprived of the many advantages and blessings derived from this beautiful, commanding and attractive evergreen of the South. It has been beautifully said, and may be plainly observed, that the delight and harmony of Nature is ever arising from the contrariety of her works—a stronger and more striking illustration of this is not easily to be found, than may be seen in the contrast of the lofty towering Pine of one hundred and fifty feet, with a rounded, beautiful, and tapering body of eighty or one hundred feet, clear of knot or limb, and with a diameter at the ground of five feet, then gracefully narrowing to two at the other end of the body; and yet, this peerless order of Nature's architecture is reared upon a sterile, arid, and silicious soil, that in its original condition will scarcely produce anything else. On the coast of the Atlantic, bounding the Southern States, this beautiful and valuable forest is, I believe, alone to be found on this Continent; and there it is confined to that level region lying and extending from the falls of the rivers to the sea-coast: or from the coast to that marked line in formation, which divides the more primitive from the secondary or alluvian, and is usually from eighty to one hundred miles in width. That this *coast-belt* remained long a barren waste, after the recession of the sea, is more than probable.

The age of the oldest Pine of the present generation (if I may so express them), is well ascertained to be between four and five hundred years. That they are of the originals is not to be supposed; but that their continuance will be greatly confined to the present growth, is much more than probable. In many other respects there is a similitude between the animal and vegetable kingdoms, as well as in their approximation; and the writer is much of the opinion that it may be plainly observed between the Long-Leaf Pine and the race of animals once common to this region, but which are now extinct and gone forever. And it would not be a great effort of fancy to perceive the likeness between them and the Aborigines who once proudly lorded over those plains. Culture and civilization are unsuited to the nature of this splendid cloud-capped native; for, unlike all other trees, it thrives best when let alone, and it repels and seems to spurn the nursing care of man, and even withers and speedily dies rather than endure it—and like the allodial native Indian who first companioned with this queen of the forest, they are making preparations to leave the habitations and settlements of the Anglo Saxons. The foundation of this speculation may be observed in all our Pine forests—in the very few, or none, of under-growth now presenting themselves, to take the place of their seniors as time may remove them. There are but very few of these younger set, and Pines are rarely to be found, (compared with the extent of the region), that are now less than twenty to forty years old; and it is distinctly to be seen, that where they are destroyed by blasts, hurricanes, or turpentine-making in the settlements, a growth of oak, hickory, &c. immediately arises in their stead, without a solitary instance of the Long-Leaf. This is more and more the case as you leave the coast toward the Western extremity of the piney region. Whether this arises from the economy displayed in all the productions of the earth, which teaches a change and variety of crops, may be a fine subject for the agricultural philosopher.

It is to the limits of North Carolina that these observations are mostly confined. The annual productive value of the Pine lands here is great and profitable, even at this day; but, in the view of the writer, as nothing compared to the enhancement that a short half-century will add to them.

Turpentine, Lumber and Tar are those products: and as the culture of the former and latter are least known, and most characteristic of the "good Old North,"

(God bless her!)—one of her most distinguished sons* has inspiringly characterized her to the world in song, a verse of which runs—

“And her Daughters—the Queen of the Forest resembling—
So graceful, so constant, to gentlest breath trembling,
And true light-wood at heart; let the match be applied them,
How they kindle and flame—Oh! none know but who’ve tried them.”

But, as I was saying or about to say that a description of the manner of making Turpentine and Tar was as well characteristic of the State, and least known out of her borders—and which, you insist, will be interesting to a large portion of the readers of your valuable Library, I will attempt briefly to give it:

An able-bodied man will require for his *field* about one hundred acres of Pine forest as his crop. After the middle of November, boxing the trees commences. Thus with a long, narrow ax, a box or chop is made in the tree, from three to six inches from the ground, or just above the swell of the roots. The width of the box is governed by the size of the tree, but usually from eight to sixteen inches. It is not cut far inward, but aims downward and to the line separating the sap and heart of the tree. The rim of the box is kept level, and it is designed to hold from one to two quarts—in small trees they do not hold so much. This boxing continues until the middle or end of March, or when the sap begins to rise freely, and will embrace about four months, as the only suitable boxing season of the year; and he is a good hand who can in this period cut his own crop for the coming year, though it may be done. The average number for a hand to cut in a day is 80 or 90—a few less in the shorter, and a few more in the longer days of that season. Here I may remark that we estimate the cutting of boxes at about one dollar the acre—though it may not cost quite so much, but nearly so. The most usual number of boxes for a hand as a crop is a thousand—though they can do well with either more or less. An acre averages about one hundred boxes—the larger trees affording room for three boxes, the middle size for only two; and the smaller (being about 9 or 10 inches in diameter), only one box.

When the hundred acres are thus boxed, the hand has his crop or field in preparation for the following ten or sixteen years. The boxes being cut, the next work is cornering, which is often performed by two strokes of the same ax at each corner of the box, taking out a light chip: a perpendicular line of about four to six inches is thus started upward from each corner. This operation is executed with great dispatch, as a hand will corner from six to eight hundred in a day.—With this last work the boxes will usually fill with turpentine, issuing as well from cornering, as from the face made in cutting the box. The next thing to be done is to lay off the ground in what is called “patterns”—this is done by staking it off in straight parallel lines, of forty yards in width, with visible and pretty permanent stakes; this is necessary to enable the hand to follow his “through” or row, regularly, and miss no tree in all his future attention to them. All this being done, and the boxes being full, or nearly so—but it is proper to remark that the boxes are all never full alike, some trees issuing much more and faster than others—the full ones indicate the necessity of “dipping,” which is done with an iron trowel-like instrument called a “dipper,” having a socket to receive a wooden handle of three or four feet. The blade is ten or twelve inches long, about six inches wide in the middle, tapering to an oval point, and flat on both sides, with the substance of about one-fourth of an inch in thickness in the middle, declining to a dull edge at the point and sides. This instrument in hand, and two rude pine buckets with bale or handle to them, and barrels, with one head out, fixed at stated distances in the “pattern” or “through,” the man begins his dipping by thrusting his dipper in at one corner of the box, ranging it down to the bottom, and pressing it upward toward the opposite corner, all with a quick motion. When nearly the whole contents of the box are collected on the flat surface of the dipper—which is immediately carried to the bucket, that being set quite up to the tree—the dipper is drawn over the near edge of the bucket to cleanse it from the adhering turpentine; and to accomplish this the more effectually, a strip of hoop-iron is fixed in the edge of the bucket to draw the dipper out. The first box being thus emptied, with quick step the next is reached, and so continued until the bucket is nearly full—it holding about eight gallons when full; the man carries it to the barrel and turns it in and there leaves it to drain, while he is filling the other bucket, which is soon to take its place. Thus, a hand will

* Judge Gaston.

† Pine.

fill from four to seven barrels a day; some active, quick hands have filled as many as ten barrels in a day. This is the whole process of dipping. The first dipping of newly cut boxes is the purely "virgin dip," though the whole product of the first year of the Pine is commonly called "virgin dip."

It is not a little remarkable that the first dipping is very different, in being thin, oily, and transparent, or more so, than any that the tree will ever again afford; and perhaps not less strange that the product of each succeeding year, as long as the tree is cultivated, is different from their antecedents. Every succeeding year the turpentine becomes thicker and more deeply colored, from a light cream toward an orange; and yet not differing perceptibly in its yield of spirits. It is from the "virgin dip" only, that the white, transparent resin, so much used in the arts, and especially in making the fine white soaps, can be made. When the dipping is thus over, the next work is to "chip" or scarify the tree, immediately over the box, and extending across the face between perpendicular lines, arising from the corners or outer edges of the box. This is done by an instrument usually called a "hacker," sometimes "shave." Its form is somewhat like a "round shave," narrowing at the cutting place to the diameter of an inch, with a shank, to be fixed securely into a strong heavy handle of about two feet length, while the faces of the trees are low, but the handle is made longer an years advance the faces higher. With the hacker the man stands nearly in front of the box, and makes a stroke from the perpendicular line to the corner, toward the center or line from the middle of the box, upward, cutting a furrow-like gash through bark and sap-wood, and about a fourth of an inch deep into the wood.—This is mostly done with one stroke, when the man immediately changes hands or position, and makes a like stroke on the opposite side, toward the centre. In this way he passes through his "patterns" until he gets over his whole crop, which he may readily do in six to eight days; and, as soon as over he returns to where he began, and goes over them again and again until his boxes are full. The filling is generally done with four to six "chippings," or four to six weeks, when dipping comes round again. In chipping, each succeeding cut is made immediately in the upper edge of the last, and should be made in breadth as narrow as the hacker can be made to cut it—as it is well ascertained that a small scar or narrow cut, if deep enough, does as well, or better, than a larger and broader one, and the economy of the narrow cuts is in saving the tree to many years longer culture, while the wide cut would carry the face out of reach prematurely.

This succession of "chipping" and "dipping" continues from April to October, or until frost, when the turpentine is done running, from a want of sufficient heat. New boxes are commonly dipped five or six times in that period—older boxes only three and four times. The quantity made by a hand is quite various, but may be rated as averaging one hundred and fifty barrels. Many make two hundred and some even as high as three hundred barrels in the year. When the last dipping is finished, which is generally in the month of November, collecting the "scrape" is the next duty. In all years after the first, the trickling of the turpentine down the face of the box, from the chipping of the hacker, and which face is lengthened upward about one foot every year, there adheres to the face or smooth surface over the box a considerable portion of the issuing turpentine—it is often nearly an inch thick on a considerable portion of the face, and is well worth being collected, which is done by scraping it off with several different instruments, as may be most fancied by the operator—often with a small spade, that detaches it from the wood, to fall into a coarse two-legged stool-box, open at one end, which open end is set against the tree below the face, at catch the "scrape" as it falls from the face of the tree and the instrument.—When the box is thus filled, it is carried to an open-headed barrel near to hand, and emptied, and so continued until the barrel is full. The "scrape" is hacked into the barrel either by trampling or pounding, until it is made to hold all it can.

This article has usually been sold by the barrel, at about half the price of the "dip" or liquid, but of late, the more correct rule of selling by weight is becoming generally established. Its yield of spirits is nearly as half of the "dip" per barrel; and for making the common or inferior resin, it is greatly preferred by the distillers. The "scrape" is thus collected with much dispatch, and is finished generally in the month of December or January. After the boxes are five

or six years old, they yield about as many barrels of "scrape" as of "dip;" and as they get still older the "scrape" increases. But it is more than probable that at half the price of "dip," the "scrape" is the most profitable to the maker.

This description embraces the whole operation of the culture or making of Turpentine, save the preparation of the barrels. The timber of which they are made is usually got out by the same hands who make the turpentine, and commonly taken from the same land as the wood for the boxes. The staves are cut thirty-two inches in length, and three-fourths of an inch in thickness—the heads about 17 inches in diameter, so that the barrel may contain thirty-two gallons.

From the time the getting off the "scrape" is finished until the season of "chipping" comes round, which is generally from the first to the tenth April, the hand is engaged in getting the barrel-timber, which ought to be well seasoned when made up for "dip" barrels; and it will save time and a loss of turpentine, to separate the heart and sap staves as they are being cut, so that the former may be made into "dip" and the latter into "scrape" barrels—the heart staves retaining and holding the liquid while it will soak *through the sap staves*. The cost of these barrels is estimated always at from twenty to thirty cents each. Thus it may be seen that, like the engagements of a farm-hand in always finding something needful to be done in every day of the year, and something that should not be neglected, so with the turpentine-hand the whole year has its various demands upon him in their proper season; so that there is no time to spare from his turpentine crop.

The profits of turpentine labor, like that bestowed on all other products, depend on price—and price is regulated by supply and demand. Compared to other labor, this has, for the last ten years, been deemed the most profitable of all. It is indeed difficult to put a proper value on Turpentine land, properly and conveniently located. Applied to the production of Turpentine, as here described, the annual value of the acre is from four to six dollars gross in its product: at three dollars per barrel, which is an interest on sixty to a hundred dollars, and when the trees are exhausted of their Turpentine, the acre is very nearly of equal value in its after products of Tar—the culture of turpentine being preparatory to the largest yield of tar from a given quantity of acres. The old faces over the turpentine box, being completely saturated with resinous matter, are the richest light-wood, and the faces are chopped out in thick scores from the standing tree, in readiness for Tar-making. Then, even after this spoliation of their *sheba*, the lands are the best of any for farming. I mean that they are more susceptible of improvement by manuring and other proper farming management and economy, than lands of more virgin fertility when exhausted. The pine lands are usually of table level, and mostly dry, or quite susceptible of drainage; but which is not often required; their soil and surface are based upon a clay substratum, and they yield to the influence of art, culture, and manure, most kindly and invitingly, while they undergo an entire change in their surface appearance. By being well manured their whitened sandy surface becomes dark and loamy, and is productive of many valuable crops that clay and stiff lands do not grow well; such as the various kind of peas and sweet potatoes, than which the Earth does not yield more profitable and comfortable crops for man and beast. A most interesting consideration arises in contemplating the productive qualities of the Long-Leaf Pine, bordering the Atlantic and the Gulf coast of the Southern States. Whether they are to take the place of those under view in this article, in furnishing the world with turpentine after these are done and gone, which must be their destiny in less than a century, is a question of no small weight in this connection. Time and trial can alone solve it. The opinion of the writer is, that the Southern Pine will yield it—profusely yield it, but for a short time only. That the warmth of the climate will induce too profuse and too late a running; creating a disease from exhaustion, that will kill the tree in the second and third years. Even here, where the climate seems to be of the right temperature for this business, the trees are often, very often, diseased from boxing, and die in acres. But this is only speculation as to the Pines of the South, and, as just remarked, can only be corrected or verified by time and experience.

Tar making is much more simple and expeditious than Turpentine; though it is very questionable if making Tar is not the most profitable at the usual prices of both articles. A hand out to making Tar alone, as Turpentine hands are,

will make from four to five hundred barrels in the year. The primitive method of making Tar is yet kept up, with little or no improvement, and it is more than likely there never will be any alteration in it, save in obtaining the *light-wood* from which it is made—the cast-away Turpentine faces of trees being quite new, and artificial in making the material for Tar. The common and old-fashioned way of making it, is first to collect in a central spot, all the *dry bones* or skeletons, as it were, of the decayed Long-Leaf-Pine, that lie and have lain bleaching on the surrounding plain for centuries perhaps: these are the heart portion of the body and limbs of fallen trees, after time and fire have destroyed the sap wood that enveloped them. With these dry bones the surface is very much covered—not entirely covered, but so thick as to fill the body of a horse-cart, in many places, in a square of ten yards, and very often in a square of ten feet. This is what is known in the “good Old North” as “*light-wood*,” being by time and nature full of resinous matter, and so inflammable as often to catch fire by holding it in the flash of a gun, when it is splintered up. With us, this is the poor man’s brilliant lamp, by which the gem of mind of many a son has been opened to science—lighted to honor, to fame, and distinction. It is also the same with the rich man, as it ministers to his comforts and social pleasures, blazing on the family hearth and displaying every smile and lineament of the “face divine.” This light-wood is carted to a place selected for the kiln, where it is split, and chopped into pieces (indifferent as to size, so that it is split,) of less than a foot to three feet in length; a circle being marked on the adjacent ground of from ten to thirty feet in diameter; the size depending entirely upon the number of barrels you design making from it: a diameter of thirty feet, and ten feet in height being the measure of a kiln of three hundred barrels. The circle being struck, and its inner surface being smoothed or shaved over with hoes—in doing which, it is scooped out with a gentle inclination from the circle to the center, so that the whole surface may present a shallow, basin-like form—the surface of this basin-form is then pested, or pounded, until it is smooth and firm. There is then a covered gutter or trough imbedded under ground, one end a foot or two beyond the center, inside, and the other end reaching eight or ten feet beyond the circle, ending in a hole of something like four by eight feet and four feet deep—this is the hole that receives the Tar when running from the kiln through this gutter—the size of the trough or gutter must be regulated by the size of the kiln: usually it is from three to six inches wide, and three to five deep. It is set with considerable inclination from the center of the kiln to the tar-hole; such an inclination as may be judged the Tar requires to be moved briskly when a little warm. The inner end of this trough (reaching beyond the center of the basin bottom,) is left open, and uncovered from one to three feet to receive and carry off the Tar as it settles. Over and around the basin, in this open end of the trough, round, unsplit light-wood is raised in pen form for three or four feet, with considerable care and taste, so that it may protect the end of the trough from immersion of Tar. The light-wood is then laid all around, with the same inclination toward the center that the bed had. Thus it is continued to be laid in lengths from circle to center, keeping the outer ends on the circle as even as possible and with the same or more inclination inward, as it progresses, until it is made eight or ten feet high. The “*setting the light wood*” being thus finished, the next thing is to “bough” it, which consists in sticking its whole outer perpendicular circle full of green pine boughs, as thick as they can be well stuck. It is easily and quickly done—every bough having a small round limb on which the straw grows in thick broom form, and is what we call pine boughs. This broken-off limb is stuck in between the ends of the split light-wood, as before said, all around; when “boughed,” it presents a mound of evergreen, pleasant to the eye to look upon. It is then ready for embankment, which is immediately to follow, if it is intended to “burn it off” directly; but unless it is to be thus burnt for market as soon as finished, they often stand one, two, or three years, before embankment, without any injury—and this is often the case, to await a season of better prices and to be ready to take the benefit of such. But the embankment must immediately follow the “boughing.” It is done by throwing up the surrounding earth all around the circle, and the earth is kept up by a pen of poles or rails fixed around the circle so as to retain the dirt perpendicularly; around and between this pen and the circle of the kiln the earth is trampled. The use of the boughs is now to be seen, in preventing this earth from

penetrating the kiln through the crevices at the outer ends of the light-wood, or in any way interfering with its covered combustion. The embankment is thus carried up nearly or quite as high as the light wood, and is in thickness from one to two feet; intended, effectually to exclude the air from entering the sides of the kiln as it is burning.

The upper surface is then to be prepared, with a similar view; and to reach it conveniently, a rude gangway is first made with long poles laid side by side from the ground, the upper ends resting on the top of the kiln; a slope is given to them to make it easy of ascent, and is covered over with turf, as it is to be in constant use while the kiln is on fire. The upper surface of the kiln is to be turfed completely over with spits cut with the spade or hoe from the adjoining ground, where small roots and fibres are most likely to hold the earth together, and which are to be carefully carried by hand to the top of the kiln, and there placed in the best order and position to smother flame; therefore the fixing of the gangway or walk to the top is of importance. The surface of the light-wood being first completely covered with green boughs or with the dead pine straw on the earth around it, it is thus turfed, save a small place of three inches all around the rim of it, where the fire is to be applied, and a spot in the center, about two feet over, that is intended to draw the heat and fire from the circle toward the center. The turfing being finished, the kiln is ready for firing, which is done on the top, and at the naked place left around the rim in turfing. When the fire works well, all contiguous to this central place is well watched and gradually lessened until the whole surface is charred when it is as well turfed over as the rest, so that all flame may be entirely suppressed. Thus being fired, the end of the trough in the tar-hole securely plugged air-tight, it must be constantly watched, to keep under any outbreak of flame; which, if permitted long, would be dangerous and difficult of suppression. In the course of one or two days it will begin to "run" from the trough (when the plug must be removed) into the tar-hole, which is usually spacious enough to contain ten or fifteen barrels, and from which it is baled out into prepared barrels made pretty much after the fashion of turpentine barrels, but with large bung-holes, into which a bucket funnel is placed to fill the barrel. Then it is ready for market. It takes several days for a kiln to "run off." According to size, from four to ten days, and during all that time, it has to be attended or watched day and night by a vigilant, careful man. Indeed it is a kind of vocation or trade to be a "tar-burner," as it is in setting and burning brick. Tar is made in the same manner, from light-wood boxed-off from the cast-away turpentine trees as they stand, and it is no doubt true that a man can make more tar, in a given time, from this light-wood than he can from the thickest set light-wood on the surface. The coal from a tar-kiln after it is run off is very valuable, and is looked upon as the very best for smith-works; they afford a large number of bushels—a kiln of a hundred and fifty barrels will give five to eight hundred bushels of the best kind of charcoal.

I have thus, sir, at your pressing solicitation, given a narration of Turpentine and Tar-making, not in polished or searched style and language, but, as you urged, in a fireside-like conversation, and it is done only at spare intervals from various mental and bodily engagements. I am not myself so well pleased with it as I think I might be, if done with a mind more abstracted from other things. If it has any merits, they are based upon experience; having been myself pretty extensively and constantly engaged in the making and distilling of Turpentine for the last ten years. Unpolished as the relation may be, it may nevertheless be of interest to those general readers who are in constant pursuit of knowledge, and who have but an imperfect idea of this branch of business, and it may be of deep and abiding interest to many who live and were born here in the Southern Pine forest. I myself have seen the time that I would cheerfully have given the price of a volume of your valuable Library for information like this as a guide; and yet I was born and raised here in the "pine woods." As before remarked, the Long-Leaf Pine forest presents a most interesting subject to the contemplation of the patriot and philosopher, as well as a cheering scene to the eyes of the beholder, and no lands afford a stronger evidence of the versatility of estimates than they do; for it is within the remembrance of the writer, who is not far in the decline of life, when these lands were looked upon as scarcely worth owning, or paying taxes on them; while now, they are the most valuable of any, as well for farming as for their natural growth and production. The purification of a noxious at-

mosphere by the odor of the Long-Leaf Pine, is an engaging subject for science. I will only here say that there is such an effect beyond doubt, as is proven daily. Hands engaged in making Turpentine are always more healthy than those employed at any other business, and so are they who live in the piney region, if unconnected with, or not adjacent to stagnant waters. If time shall prove the Southern Long-Leaf Pine of value, approaching those of Carolina in their yield and products, what a source of wealth they must be to the Nation as a portion of the public lands; and how improvident and short-sighted they must be who insist upon giving away, or graduating the price of them, based upon present estimates of value. If the lands not sold are let alone, only to be protected by the Government from the hands of the spoiler, until time shall bring about their true value and they are permitted to fulfil their intended destiny, in educating the rising and succeeding generations, and making and improving the highways of trade and pleasure throughout the States, what portion of the habitable globe can compare with these United States of America in all the means and ends necessary to the happiness of man?

COMMON SALT.

REASONS WHY IT SHOULD NOT BE USED AS A MANURE FOR THE CANE FIELD.

JOHN S. SKINNER, Esq., Editor of Farmers' Library :

PARISH OF ASCENSION, La., April 5th, 1846.

Dear Sir—The last time I had the pleasure of seeing you, some one present spoke of the favorable mention made by Judge Rost, in his address published in the Farmers' Library, of common salt as a fertilizer. I observed that notwithstanding the favorable result of Judge Rost's experiments; and although a sugar planter of some note in the State had, for a number of years past, made a liberal application of salt to his land; yet there was a chemical fact which rendered it highly objectionable as a manure for the cane field. I alluded to the combination of common salt (chloride of sodium,) with sugar, in the proportion of one part of salt to six parts of sugar, by which an uncrystalizable compound is formed. That I spoke *authoritatively* will appear from what follows.

Boussingault in his Rural Economy (translated by George Law) says: "Mr. Peligot has pointed out several causes which concur to deteriorate sugar; among the number, a viscous fermentation which renders the sap thick and stringy, like mucilage, by which the boiling becomes difficult and the crystallization of the sugar which has escaped change is rendered imperfect. 2. An acidity which takes place when the juice is not run at once into the coppers and boiled—an acidity which requires the addition of lime to destroy or to prevent. The alkaline earth, as I have had occasion to say, is by no means indispensable; its utility under ordinary circumstances is probably confined to assisting the defection by forming an insoluble precipitate with some of the organic substances which are always to be met with in small quantities in the cane juice; perhaps also to making an earthy soap with the fatty matters which adhere to the cane and are expressed in the crushing. When lime is added to correct acidity, it forms an acetate or a lactate—salts which are peculiarly soluble, uncrystalizable and which necessarily retain a quantity of syrup in the syrupy state. 3. The presence of certain mineral salts in the cane. Common salt, for instance, in combining with sugar, forms a deliquescent compound in which one part of salt is united with six parts of sugar: such a compound as this of course renders a large quantity of syrup indisposed to crystallize. It is, therefore, impossible to be too cautious, according to Mr. Peligot, in the choice of manure for a cane field; that which contains any common salt must needs be injurious in one way, however advantageous it may be in another. The entire absence of this salt in the soil of plantations which are very remote from the sea shore, is perhaps one of the causes which increase the quantity of sugar obtained from the crop, and makes it more easily manufactured in those districts."

And what follows is extracted from "A Report of Chemical Analyses of Sugars and Molasses," by Professors Bache and McCulloh, prepared in obedience to a resolution of Congress. "Now it follows from this fact, and the direct experiments of Mr. Hervey, that crystalizable cane sugar is the only saccharine matter in the cane, and that all the molasses sugar, grape sugar, &c., contained in the molasses, are results of decomposition of cane sugar by imperfect manage-

ment. Certainly, then, too much importance cannot be attached by the planter to a knowledge of the causes which produce this decomposition, and the remedies. When beets grow in land too highly manured, or containing soluble salts, their juice is very difficult to crystalize, and yields a large quantity of molasses. So canes grown upon lands where timber has been recently burned, take up the soluble salts by their roots, which must act very injuriously. Common salt will form a compound with six times its weight of sugar, which refuses to crystalize, and remains in the mother liquor: so likewise alkaline carbonates, and other salts, operate to increase the quantity of molasses, and injure the quality of the sugar."

The authorities precited are sufficient to establish the fact of the combination of salt with sugar, and that the compound resulting therefrom is uncrystalizable. It is to be inferred, also, that all the soluble salts are obstructive of saccharine crystallization, and are molasses-producing agents. Now the problem to be solved in sugar-making, is to bring the sugar-containing liquid to the state of a pure solution of sugar in water—to eliminate all extraneous matters from the mother liquor. The application therefore of common salt to the soil, by which a substance antagonistic to crystallization is introduced into the mother liquor, is *working backward*. It is, indeed, quite apparent that the sugar planter should be cautious in using any mineral agent as a manure for the cane-field, since, however, promotive of vegetation such agent may be, it is, at the same time, obstructive of crystallization.

I am, with great respect, &c.

H. B. T.

GROWTH OF THE WEST . . . EFFECT OF STEAM-POWER.

{What more striking picture could we present than that which is offered in the enclosed, from a gallant old soldier, whose heart, while his head grows gray, beats if possible more and more ardently in the cause of his country; and within whose personal observation such progress has been made in the growth of the great region to which he refers?}

NEW-ORLEANS, April 4th, 1846.

My Dear Sir: Notwithstanding your favor of the 2d inst. was handed to me at a time when much occupied with professional duties, indicated by the late special message of the President, suggesting the propriety of immediate *action*—"in Peace to prepare for War"—I could not deny myself the pleasure of a compliance with your request that I should give you some of my reminiscences and reflections regarding the vast progress which has been made in the agricultural developments of the country connected with the Mississippi, since the acquisition of this region under the administration of Mr. Jefferson.

When a young subaltern in 1799, I built at the long island of Holstein a substantial flat-boat, adapted to the navigation of the Western rivers, on board of which I embarked in April for Natchez—a distance of sixteen hundred miles. The valley of the Holstein river to its junction with the Tennessee, and thence to S. W. Point, at the mouth of Clinch river, a distance of nearly 200 miles as the rivers meander, was very thinly settled—exhibiting only the incipient stages of Agriculture: half-cleared corn-fields, fat cattle, horses, and hogs, enjoying for the most part the luxury of wild grass, cane-brakes, and nuts of the forest. From S. W. Point to the mouth of the Tennessee, a distance of near 700 miles, thence to the mouth of Ohio, 60 miles, and thence to Natchez, 700 miles, was at that time a howling wilderness, of nearly fifteen hundred miles, with the exception of four small military posts—namely, *Massac, New-Madrid, Chickasaw Bluffs*, and the *Walnut-Hills*—neither of which posts was garrisoned by more than thirty to sixty men: nor had either place more than from five to twenty acres of land in cultivation. The Chickasaw Bluffs, the present site of Memphis, Tennessee, had just been occupied by a company of U. S. troops (commanded by the Revolutionary veteran Captain Pike, the venerable father of our late gallant General Z. M. Pike, who fell in the arms of victory in Canada in 1813.) Not a tree of the thick forest of the Bluff had been disturbed, save only what was needed to cover the company from the pelting of the storm. That beautiful Bluff which now sustains a flourishing city, and exports annually 150,000 bales of cotton, worth \$5,000,000, could not then, nor for nearly twenty years after that period, furnish as much cotton or corn as would clothe and feed a single family: and the same, or nearly the same, may be said of Walnut-Hills, the present site of Vicksburg.

The immediate vicinity of Natchez and New-Orleans had indeed begun to contribute toward the cultivation of a supply of *cotton*, amounting to something more than sufficient to meet the expense of clearing and cultivating their lands—while the inhabitants of Louisiana were enjoying the proud satisfaction of having succeeded in making what they then deemed to be respectable crops of *sugar*.

The quantity, however, of *sugar* or *cotton* annually produced for exportation or for inland trade, prior to the year 1800, I have not been able to ascertain: but I learned from my friend, Daniel Clark, and other distinguished citizens of New-Orleans and Natchez in the years 1802-3, that these promising products of Agriculture (cotton and sugar), had prior to that period contributed greatly to improve the condition of the Agriculture of these sparse settlements, and give to the commerce of New-Orleans a degree of activity and an interest far surpassing anything which the occasional trade of Kentucky tobacco and provisions, or the *peltries* and *furs* obtained from the Indian trade, had ever produced. I am under the impression, however, that the settlement around Natchez, with the cotton-planters of Louisiana and West Florida, could not have furnished in any year prior to 1800 more than is now often brought to this city in one day—say 12,000 bales; nor that the supply of sugar could in any year prior to that period have exceeded 5,000 hogsheads.

When I state to you that the sugar crop of Louisiana has been gradually increasing, until it has amounted to 200,000 hogsheads in one year, (the last year,) I am sure I need not trespass upon your time by details, such as the statistics of the country will furnish you in abundance.

I will conclude with a concise outline of the progress of improvement in the valley of the Mississippi by presenting to you a few simple facts, embracing the principal causes and prominent results of this Herculean progress of improvement.

From the date of my *flat-boat trip* down the Holstein, Tennessee, Ohio, and Mississippi rivers, to the last year of the War of 1814-15—though the population of the Western States had grown from half a million to nearly three millions—yet until the last mentioned period, few men had the temerity to predict that this mighty river would ever afford such facilities to any description of *ascending boats* or *other vessels*, as to establish a respectable commercial intercourse between the vast bodies of fertile lands and mineral wealth of the upper and middle regions of the valley of the Mississippi and the sea. The great rapidity of the current, and the numerous snags and other impediments by which the navigation was obstructed, rendered such an intercourse almost hopeless. In May, 1799, I met three small barges carrying thirty tons burden, and navigated by 36 oars each. They then made but one trip in the year—departing from Louisville at the close of the sickly season in October, and returning thither in the following spring. Their price for freight was ten cents per pound, or twenty to twenty-five dollars per barrel for sugar or rum or brandy.

It was not until long after this period, that an account of Robert Fulton's discovery of the successful application of steam-power to boats and other vessels inspired me with the pleasing hope that the time was not far distant when boats of a larger class would be seen ascending the Mississippi river to Louisville, in less than one month. But it was not until the year 1821 that I ventured to predict that the time would come, when vessels carrying 800 tons burden might be seen by persons then living, departing from New Orleans with a full cargo, and running to Louisville, a distance of near fifteen hundred miles, in some few hours short of six days! This consummation, so long and fervently desired by me, I have had the inexpressible happiness of witnessing.

In this great triumph of the genius of Fulton will be found why it is that, in the short space of twenty-five years, the population of the valley of the Mississippi has grown from three millions to eleven millions; and, above all, that the chivalry of the West—the fighting men of the valley of the Mississippi—have multiplied from three hundred thousand to seventeen hundred thousand! Agriculture has increased in an equal ratio.

I must here break off my narrative, with a promise to complete it soon and send it by mail.

I am with great respect and esteem your friend,

J. S. SKINNER, Esq. Editor, &c. &c.

EDMUND P. GAINES.

MAPLE SUGAR.

[From a great mass of newspaper scraps and other trash strung together in that enormous Agricultural Annual put out by the United States, called "*Report of the Commissioner of Patents*," we select for this Number what follows on the subject of *Maple Sugar*.

Who the "*we*" is who gives the profound advice about keeping the vessels *clean* and not using "half-decayed troughs with a liberal infusion of rain-water, dirt, &c."—as if common sense would not teach that—we don't know; neither can we help "*we*" to tell how much, or rather how *little* deduction is to be made from the aggregate Sugar crop of the United States, for the *Corn-stalk Sugar*! It would probably require the use of the most powerful magnifier!]

MAPLE SUGAR....A NEW ELEMENT.

To the Editor of the New-York Tribune:

WINDSOR Co., Vermont, April, 1845.

We are just through our annual sugar season, and all feel satisfied. The crop is large, very large—more than in any year for some time. Every farmer has enough, and many have made one, two, or three tons.

Arrangements have been made to give more particular statistics of the amount. It is becoming of great importance to the State, and more interest is taken in improving the quality. But my object at this time is merely to call the attention of scientific men to the nature of a substance found in the sugar. The sugar-makers have always noticed that a kind of *grit* settles in the sugar and molasses after it is made. This varies greatly in quantity in different years. The present year the quantity is large. When the sugar was manufactured chiefly in the woods, it was supposed to be ashes or dirt, deposited during the process of evaporation; but the quantity is the same when the sap is evaporated in the house, and cleansed with the greatest care. From a small quantity (perhaps 50 lbs.) I obtained nearly a gill of this substance. When tasted with the sugar, it simply appears like sand; but upon dissolving the sugar, and repeatedly washing it with water, I obtained a substance nearly white, and with a *very pungent, alkaline taste*.

The presence of ammonia in sugar is mentioned by Liebig and Johnston, in their works upon agricultural chemistry; but, if I understand their remarks upon the subject, they refer only to a gas which arises during the process of evaporation. But here is a tangible salt, and of sufficient quantity to be of some interest.

Will some one, through your paper, give an account of the nature of the substance, and thus satisfy the curiosity of many of your readers, and perhaps add a new fact to the researches of science?*

As most persons who have not informed themselves on the subject imagine that we are indebted to cane sugar for our main supply, and that maple sugar is a petty neighborhood matter, not worth the figures employed to represent it, we propose to spend some space in stating the truth on this matter. We will exhibit, 1st, the amount produced; 2d, the proper way of manufacturing it; 3d, the proper treatment of the sugar-tree groves.

We shall confine our statistics to the most important northern and western States.

| | | | |
|--------------------------------------|------------|---|------------|
| 1. New-York produces annually...lbs. | 10,018,109 | 9. Michigan..... | 1,329,784 |
| 2. Ohio..... | 6,363,386 | Total of nine States..... | 22,464,799 |
| 3. Vermont..... | 4,647,934 | Residue thus: Add for Maine, Massachusetts, Connecticut, Maryland | |
| 4. Indiana..... | 3,727,595 | Tennessee, Illinois, Iowa, Missouri, | |
| 5. Pennsylvania..... | 2,265,755 | and Wisconsin..... | 2,030,853 |
| 6. New-Hampshire..... | 1,162,368 | | 24,495,652 |
| 7. Virginia..... | 1,541,833 | | |
| 8. Kentucky..... | 1,377,835 | | |

Something should be subtracted for beet-root and *corn-stalk sugar*. But, on the other hand, the statistics are so much below the truth on maple sugar, that the deficiency may be set off against beet-root and corn-stalk sugar. That the figures do not more than represent the amount of *maple sugar* produced in these States, may be presumed from one case. Indiana is set down at 3,727,595 lbs.; but in the four counties of Washington, Warriek, Posey, and Harrison, no account seems to have been taken of this article. In Marion county, four of the first sugar-making townships, Warren, Lawrence, Centre, and Franklin, are not reckoned. If we suppose these four townships to average as much as the others in Marion county, they produced 77,643 lbs.; and instead of putting Marion county down at 97,064 lbs., it

* Professor Mapes could probably do it off-hand.

[Ed. Farm. Lib.

† We thought this humbug belonged to the tribe of animals—that it had served its purpose, lived out its time, and expired.

[Ed. Farm. Lib.

should be 174,712 lbs. It is apparent, from this case, that in Indiana the estimate is far below the truth; and if it is half as much so in the other eight States enumerated,* then 22,464,799 lbs. is not more than a fair expression of the *maple sugar* alone.

Louisiana is the first sugar-growing State in the Union. Her produce, by the statistics of 1810, was 119,947,720, or nearly 120,000,000 lbs. The States of Mississippi, Alabama, Georgia, South Carolina, and Florida, together, add only 615,231 lbs. more.

Cane sugar in the United States.....lbs. 120,593,001

Maple sugar in the United States..... 24,495,652

Thus about one-sixth of the sugar made annually in the United States is made from the maple tree.† It is to be remembered, too, that in Louisiana it is *the* staple, while at the north maple sugar has never been manufactured with any considerable skill, or regarded as a regular crop, but only a temporary device of economy. Now it only needs to be understood that maple sugar may be made so as to have the flavor of the best cane sugar, and that it may, at a trifling expense, be refined to white sugar, and the manufacture of it will become more general, more skillful, and may, in a little time, *entirely supersede the necessity of importing cane sugar.*‡ Indiana stands fourth in the rank of maple sugar-making States. Her annual product is at least *four million pounds*, which, at 6 cents a pound, amounts to \$160,000 per annum. A little exertion would quickly run up the annual value of our home-made sugar to half a million of dollars.

Maple sugar now only brings about two-thirds the price of New Orleans. The fault is in the manufacturing of it.¶ The saccharine principle of the *cane and tree is exactly the same*. If the same care were employed in their manufacture, they would be undistinguishable, and maple sugar would be as salable as New-Orleans, and, if afforded at a less price, might supplant it in the market. The average quantity of sugar consumed in England by each individual is about thirty lbs. per annum. Marion county contains about 20,000 inhabitants. At 30 lbs. per head, the sugar consumed annually is not less than 600,000 lbs., and for the whole State 24,000,000 lbs., reckoning the population at 800,000. There is annually produced in this county about 175,000 lbs. of sugar; leaving about 425,000 lbs. to be purchased, which, at an average of *five cents* per pound, amounts for this single county to \$21,250, a sum well worth saving, and by a little attention to the making of domestic sugar, very easily saved.

MAPLE SUGAR MAKING.—1. Greater care must be taken in collecting the sap. Old and half-decayed wooden troughs, with a liberal infusion of leaves, dirt, &c., impart great impurity to the water. Rain-water, decayed vegetable matter, &c., add *chemical* ingredients to the sap, are troublesome to extract, and injure the quality if not removed. The expense of clean vessels may be a little more, but with care it could be more than made up in the quality of the sugar. Many are now using earthen crocks. These are cheap, easily cleaned, and every way desirable, with the single exception of breakage. But if wooden troughs are used, let them be kept scrupulously clean.

2. The kettles should be scoured thoroughly before use, and kept constantly clean. If rusty, or foul, or coated with burnt sugar, neither the color nor flavor can be perfect. Vinegar and sand have been used by experienced sugar-makers to scour the kettles with. It is best to have at least three to a range.

* Dr. J. C. Jackson puts Vermont at 6,000,000 lbs. per annum, while the census only gives about 4,000,000.

† The data of these calculations, it must be confessed, are *very* uncertain; and conclusions drawn from them as to the relative amounts of sugar produced in different States are to be regarded, at the very best, as problematical. We extract the following remarks from an article in the Western Literary Journal, from the pen of Charles Cist, an able statistical writer:

"It is not my purpose to go into an extended notice of the errors in the statistics connected with the census of 1840. A few examples will serve to show their character and extent. In the article of hemp, Ohio is stated to produce 9,080 tons, and Indiana 8,665 tons, either equal nearly to the product of Kentucky, which is reported at 9,992 tons, and almost equal, when united, to Missouri, to which 18,010 tons are given as the aggregate. Virginia is stated to raise 25,594 tons, almost equal to both Kentucky and Missouri, which are given as above at 28,062 tons. Now the indisputable fact is, that Kentucky and Missouri produce more hemp than all the rest of the United States, and ten times as much as either Ohio, Indiana, or Virginia, which three States are made to raise 50 per centum more than those two great hemp-producing States.

"The sugar of Louisiana is given at 119,947,720 lbs., equal to 120,000 hogsheds; 160 per cent. more than has been published in New-Orleans as the highest product of the five consecutive years, including and preceding 1840.

"But what is this to the wholesale figure-dealing which returns 3,160,949 tons of hay as the product of New-York for that article—a quantity sufficient to winter all the horses and mules in the United States!

"Other errors of great magnitude might be pointed out: such as making the tobacco product of Virginia 11,000 hhds., when her inspection records show 55,000 hhds. thrown into market as the crop of that year.—Who believes that 12,243 lbs. of pitch, resin, and turpentine, or the tenth part of that quantity, were manufactured in Louisiana in 1840, or that New-York produced 10,093,991 lbs. of maple sugar in a single year, or twenty such statements equally absurd, which I might take from the returns?"

Mr. Cist will find, in the appendix to Doct. Jackson's Final Report on the Geology of New Hampshire, a statement that Vermont makes 6,000,000 lbs. of sugar annually. If this be so, we may, without extravagance, suppose that New York reaches 10,000,000 lbs. So far as we have collateral means of judging, the amount of maple sugar is *understated* in the census of 1840.

‡ Credar Judæas, &c.

[Ed. Farm. Lib.

¶ Would not self-interest have accomplished before now a result of so much importance, as it leads men to do in all other equally obvious cases

[Ed. Farm. Lib.

All vegetable juices contain *acids*, and acids resist the process of crystallization.

Dr. J. C. Jackson* directs one *measured ounce* (one-fourth of a gill) of pure lime-water to be added to every gallon of sap. This neutralizes the acid, and not only facilitates the granulation, but gives sugar in a free state, now too generally acid and deliquescent, besides being charged with salts of the oxide of iron, inasmuch that it ordinarily strikes a black color with tea.

The process of making a pure white sugar is simple and unexpensive. The lime added to the sap, combining with the peculiar acid of the maple, forms a neutral salt; this salt is found to be easily soluble in alcohol. Dr. Jackson recommends the following process:—Procure sheet-iron *cones*, with an aperture at the small end or apex; let it be coated with white lead and boiled in seed oil, and thoroughly dried, so that no part can come off. [We do not know why earthen cones, unglazed and painted, would not answer equally well, besides being much cheaper.] Let the sugar be put into these cones, stopping the hole in the lower end until it is entirely cool. Then remove the stopper, and pour upon the base a quantity of strong whisky or fourth proof rum; it allow this to filtrate through until the sugar is white. When the loaf is dried it will be pure white sugar, with the exception of the alcohol. To get rid of this, dissolve the sugar in pure boiling hot water and let it evaporate until it is dense enough to crystallize. Then put it again into the cone-moulds and let it harden. The dribbles which come away from the cone while the whisky is draining may be used for making vinegar. It is sometimes the case that whisky would, if freely used in a sugar camp, go off in a wrong direction, benefiting neither the sugar nor the sugar-maker.—If, on this account, any prefer another mode, let them make a *saturated* solution of loaf sugar, and pour it, in place of the whisky, upon the base of the cones. Although the sugar will not be quite as white, the *drainings* will form an excellent molasses, whereas the drainings by the former method are good only for vinegar.

CARE OF SUGAR ORCHARDS.—It is grievous to witness the waste committed upon valuable groves of sugar trees. If the special object was to destroy them, it could hardly be better reached than by the methods now employed. The holes are carelessly made, and often the abominable practice is seen of cutting channels in the tree with an ax. The man who will murder his trees in this tomahawk and scalping-knife manner, is just the man that Esop meant when he made the fable of a fellow who killed his goose to get at once all the golden eggs. With good care, and allowing them occasionally a year of rest, a sugar-grove may last for centuries.

1. As soon as possible get your sugar-grove laid down to grass, clear out under-brush, thin out timber and useless trees. Trees in open land make about *six pounds* of sugar, and forest trees only about *four pounds*, to the season. As the maple is peculiarly rich in potash, (four-fifths of the potash exported is made from sugar-maple,) it is evident that it requires that substance in the soil. Upon this account we should advise a liberal use of wood-ashes upon the soil of sugar-groves.

2. *Tapping Trees.*—Two taps are usually enough—never more than three; for though as many as 24 have been inserted at once without killing the tree, regard ought to be had to the use of the tree through a long series of years. At first, bore about two inches; after ten or twelve days remove the tap, and go one or two inches deeper. By this method more sap will be obtained than by going down to the colored wood at first. I state, upon the authority of Wm. Tripure, a Shaker, of Canterbury, N. H., that about 7 lbs. of sugar may be made from a barrel of 20 gallons, or four lbs. the tree for forest trees; and two men and one boy will tend a thousand trees, making 4,000 lbs. of sugar.

3. We would recommend the setting of pasture lands and roadsides of the farm with sugar-maple trees. Their growth is rapid, and no tree combines more valuable properties. It is a beautiful shade tree; it is excellent for fuel; it is much used for manufacturing purposes; its ashes are valuable for potash, and its sap is rich in sugar. There are 27 species of the maple known; 12 of them are indigenous to this continent. All of these have a saccharine sap, but only two to a degree sufficient for practical purposes, viz: *acer saccharinum*, or the common sugar-maple, and *acer nigrum*, or the black sugar-maple. The sap of these contains about half as much sugar as the juice of the sugar-cane. One gallon of pasture maple sap contains, on an average, 3,451 grains of sugar; and one gallon of cane-juice, (in Jamaica,) on an average, yields 7,000 grains of sugar.

But the cane is subject to the necessity of annual and careful cultivation, and its manufacture is comparatively expensive and difficult. Whereas the maple is a permanent tree; requires no cultivation; may be raised on the borders of farms without taking up ground, and its sap is easily convertible into sugar, and, if carefully made, into sugar as good as cane-sugar can be. Add to the above considerations that the sugar-making period with us is a time of comparative leisure with the farmer, and the motives for attention to this subject of domestic sugar-making seem to be complete.

* Appendix to Final Report on the Geology and Mineralogy of New Hampshire, page 361. This admirable report is an able exposition of the benefit of public State surveys.

† If those who drink whisky would pour it on the sugar in the refining cones, instead of upon sugar in tumblers, it would refine them as much as it does the sugar, performing two valuable processes at once.

PASTORAL LIFE AND MANUFACTURES OF THE ANCIENTS.

THE HISTORY OF SILK, COTTON, LINEN, WOOL, and other Fibrous Substances; including Observations on Spinning, Dyeing, and Weaving. Also an account of the Pastoral Life of the Ancients, their Social state and attainments in the Domestic Arts—with Appendices. Illustrated by Steel Engravings. New-York: Harper & Brothers, 82 Cliff-st.

To this work of elegant literature we may have recourse for an apt illustration to enforce the views we have advanced as to the nature and variety of knowledge with which every farmer should endeavor to store and embellish the mind of his son.

As it does not follow that a garden, enriched with heavy crops of potatoes and carrots, should not also be beautified with roses and lilies; so neither is it becoming in the man of the country to study only the time to sow and the depth to plant—how to fatten and when to shear or to slaughter. The idea that practical farmers should not study botany, or mineralogy, or make pretension to any knowledge of Natural History, and other of the many attractive and interesting subjects, in natural and close association and alliance with their position and pursuits, has its origin in the arrogant and supercilious presumption of other classes, or in a mean under estimate of what is becoming to themselves. The truth is that there is no business or profession which branches off into so many and such elegant walks of science and literature, unless it be perhaps that of the medical profession. True, the lawyer who is not content to be a mere pettifogger, should explore the field of history, be familiar with the great poets, and often has occasion for some elementary knowledge of several sciences to enable him the closer to examine witnesses, and to illustrate the principles sometimes of medical jurisprudence; sometimes of navigation, sometimes of vegetable physiology; but the *gravamen*, the great labor of his professional life, is the *dry study of statute law*. To the farmer, the book of Nature is open to invite, instruct and amuse him on every hand, and if a right-minded man, he can neither be content with himself, nor qualified to fill the high and responsible function of parent to his children, if he does not give a portion of his time to the acquirement of such literary knowledge, and such acquaintance with Natural History, as will enable him to understand the nature, habits, and properties of the things that surround him in his every day walks. To suppose that it becomes him to confine himself tamely and quietly to the mere practical working details of his profession, is an idea fit to be inculcated by demagogues who would brutalize and then ride him: it is an insult which his own self respect cannot too promptly resent. Such at least are our humble notions, and on such notions we shall act in the management of this Journal.

Were we called upon to indicate, for example, the sort of recreation in the way of reading or study, in which it may be allowable and meet for him to indulge at leisure moments, we might well refer for illustration to the book in hand, "PASTORAL LIFE AND MANUFACTURES OF THE ANCIENTS." See for instance to what variety of anecdote, information, and even poetry it treats you, on the subject of the humble but useful *silk-worm*—a poor insect, for whose products in a foreign land our industry is taxed some ten millions a year. Now ask any of our young men, just turned out from an *ordinary* old-fashioned country school, or most of our dandies grown to man's estate, to tell you all they know

about the silk-worm, and compare it with what follows. These are the sort of books which, along with standard works on Agriculture, parents should place in reach of their children. We take from its pages the following :

DESCRIPTION OF THE SILK-WORM, &c.

ITS NATURAL HISTORY AND HABITS.

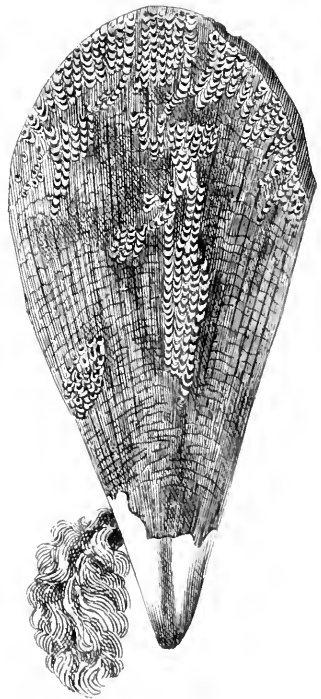
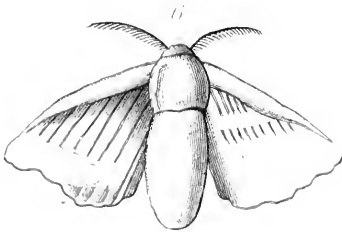
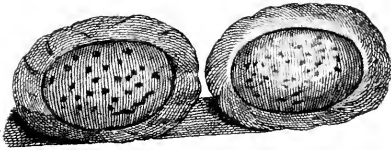
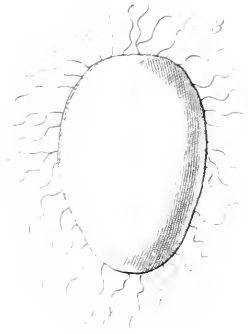
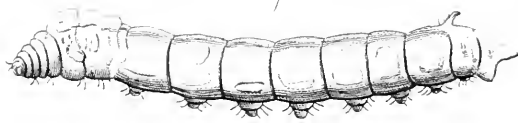
It can never be too strongly impressed upon a mind anxious for the acquisition of knowledge, that the commonest things by which we are surrounded are deserving of minute and careful attention. The most profound investigations of Philosophy are necessarily connected with the ordinary circumstances of our being, and of the world in which our every-day life is spent. With regard to our own existence, the pulsation of the heart, the act of respiration, the voluntary movement of our limbs, the condition of sleep, are among the most ordinary operations of our nature ; and yet how long were the wisest of men struggling with dark and bewildering speculations before they could offer anything like a satisfactory solution of these phenomena, and how far are we still from an accurate and complete knowledge of them ! The science of Meteorology, which attempts to explain to us the philosophy of matters constantly before our eyes, as dew, mist, and rain, is dependent for its illustrations upon a knowledge of the most complicated facts, such as the influence of heat and electricity upon the air ; and this knowledge is at present so imperfect that even these common occurrences of the weather, which men have been observing and reasoning upon for ages, are by no means satisfactorily explained, or reduced to the precision that every science should aspire to. Yet, however difficult it may be entirely to comprehend the phenomena we daily witness, everything in Nature is full of instruction. Thus the humblest flower of the field, although, to one whose curiosity has not been excited, and whose understanding has, therefore, remained uninformed, it may appear worthless and contemptible, is valuable to the botanist, not only with regard to its place in the arrangement of this portion of the Creator's works, but as it leads his mind forward to the consideration of those beautiful provisions for the support of vegetable life, which is the part of the physiologist to study and admire.*

This train of reasoning is peculiarly applicable to the economy of insects. They constitute a very large and interesting part of the animal kingdom. They are everywhere about us. The *spider* weaves his curious web in our houses ; the *caterpillar* constructs his silken cell in our gardens ; the *wasp* that hovers over our food has a nest not far removed from us, which she has assisted to build with the nicest art ; the *bee* that crawls across our path is also an ingenious and laborious mechanic, and has some curious instincts to exhibit to those who feel an interest in watching his movements ; and the *moth* that eats into our clothes has something to plead for our pity, for he came, like us, naked into the world, and he has destroyed our garments, not in malice or wantonness, but that he may clothe himself with the same wool which we have stripped from the sheep. An observation of the habits of these little creatures is full of valuable lessons, which the abundance of the examples has no tendency to diminish. The more such observations are multiplied, the more we are led forward to the freshest and the most delightful parts of knowledge ; the more do we learn to estimate rightly the extraordinary provisions and most abundant resources of a Creative Providence ; and the better do we appreciate our own relations with all the infinite varieties of Nature, and our dependence, in common with the *ephemeron* that flutters its little hour in the summer sun, upon that Being in whose scheme of existence the humblest as well as the highest creature has its destined purposes. " If you speak of a *stone*," says St. Basil, " if you speak of a *fly*, a *gnat*, or a *bee*, your conversation will be a sort of demonstration of His power whose hand formed them, for the wisdom of the workman is commonly perceived in that which is of little size. He who has stretched out the heavens, and dug up the bottom of the sea, is also He who has pierced a passage through the sting of the bee for the ejection of its poison."

If it be granted that making discoveries is one of the most satisfactory of human pleasures, then we may without hesitation affirm that the study of insects is one of the most delightful branches of Natural History, for it affords peculiar facilities for its pursuit. These facilities are found in the almost inexhaustible variety which insects present to the curious observer.

There is, perhaps, no situation in which the lover of Nature and the observer of animal life may not find opportunities for increasing his store of facts. It is told of a state prisoner under a cruel and rigorous despotism, that when he was excluded from all commerce with mankind, and was shut out from books, he took an interest and found consolation in the visits of a *spider* ; and there is no improbability in the story. The operations of that persecuted creature are among the most extraordinary exhibitions of mechanical ingenuity ; and a daily watching of the workings of its instinct would beget admiration in a rightly constituted mind. The poor prisoner had abundant leisure for the speculations in which the spider's web would enchain his understanding. We have all of us, at one period or other of our lives, been struck with some singular evidence of contrivance in the economy of insects, which we have

* " Insect Architecture," vol. i. p. 9. London : Charles Knight & Co., Ludgate-st. 1845.



seen with our own eyes. Want of leisure, and probably want of knowledge, have prevented us from following up the curiosity which for a moment was excited. And yet some such accident has made men naturalists, in the highest meaning of the term. Bonnet, evidently speaking of himself, says, "I knew a naturalist, who, when he was seventeen years of age, having heard of the operations of the ant-dion, began by doubting them. He had no rest till he had examined into them; and he verified them, he admired them, he discovered new facts, and soon became the disciple and the friend of the Pliny of France!" (Reaumur). It is not the happy fortune of many to be able to devote themselves exclusively to the study of Nature, unquestionably the most fascinating of human employments; but almost any one may acquire sufficient knowledge to be able to derive a high gratification from beholding the more common operations of animal life. His materials for contemplation are always before him.

The silk-worm is a species of caterpillar which, like all other insects of the same class, undergoes a variety of changes during the short period of its life; assuming, in each of three successive transformations, a form wholly dissimilar to that with which it was previously invested.

Among the great variety of caterpillars, the descriptions of which are to be found in the records of Natural History, the silk-worm occupies a place far above the rest. Not only is our attention called to the examination of its various transformations, by the desire of satisfying our curiosity as entomologists, but our artificial wants incite us likewise to the study of its nature and habits, that we may best and most profitably apply its instinctive industry to our own advantage.

It has been well observed by Pultein, a writer on this subject, that "there is scarcely anything among the various wonders which the animal creation affords, more admirable than the variety of changes which the silk-worm undergoes;" but the curious texture of that silken covering with which it surrounds itself when it arrives at the perfection of its animal life, vastly surpasses what is made by other animals of this class. All the caterpillar kind do, indeed, pass through changes like those of the silk-worm, and the beauty of many in their butterfly state greatly exceeds it; but the covering which they put on before this mutation is poor and mean, when compared to that golden tissue in which the silk-worm wraps itself. They, indeed, come forth in a variety of colors, their wings bedropped with gold and scarlet, yet are they but the beings of a summer's day, both their life and beauty quickly vanish, and they leave no remembrance after them; but the silk-worm leaves behind it such beautiful, such beneficial monuments, as at once to record both the wisdom of their Creator and His bounty to man."

Silk-worms proceed from eggs which are deposited during the summer by a grayish kind of moth, of the genus *palana*. These eggs are about equal in size to a grain of mustard seed; their color when first laid is yellow; but in three or four days after, they acquire a bluish cast. In temperate climates, and by using proper precautions, these eggs may be preserved during the winter and spring, without hatching. The period of their animation may be accelerated or retarded by artificial means, so as to agree with the time when the natural food of the insect shall appear in ample abundance for its support.

All the curious changes and labors which accompany and characterize the life of the silk-worm are performed within the space of a very few weeks. This period varies, indeed, according to the climate or temperature in which its life is passed; all its vital functions being quickened, and their duration proportionally abridged, by warmth. With this sole variance, its progressions are alike in all climates, and the same mutations accompany its course.

The three successive states of being put on by this insect are, that of the worm or caterpillar, of the chrysalis or arnelia, and moth. In addition to these more decided transformations, the progress of the silk-worm in its *caterpillar state* is marked by *five distinct stages of being*.

When first hatched, it appears as a small black worm about a quarter of an inch in length. Its first indication of animation is the desire which it evinces for obtaining food, in search of which, if not immediately supplied, it will exhibit more power of locomotion than characterizes it any other period. So small is the desire of change on the part of these insects, that of the generality it may be said their own spontaneous will seldom leads them to travel over a greater space than three feet throughout the whole duration of their lives. Even when hungry, the worm still clings to the skeleton of the leaf from which its nourishment was last derived. If, by the continued cravings of its appetite, it should be at length incited to the effort necessary for changing its position, it will sometimes wander as far as the edge of the tray wherein it is confined, and some few have been found sufficiently adventurous to cling to its rim; but the smell of fresh leaves will instantly allure them back. It would add incalculably to the labors and cares of their attendants, if silk-worms were endowed with a more rambling disposition. So useful is this peculiarity of their nature, that one is irresistibly tempted to consider it the result of design, and a part of that beautiful system of the fitness of

things, which the student of Natural History has so many opportunities of contemplating with delight and admiration.

In about eight days from its being hatched, its head becomes perceptibly larger, and the worm is attacked by its first sickness. This lasts for three days; during which time it refuses food, and remains motionless as in a kind of lethargy. Some have thought this to be sleep, but the fatal termination which so frequently attends these sicknesses seems to afford a denial to this hypothesis. The silk-worm increases its size so considerable, and in so short a space of time,—its weight being multiplied many thousand fold in the course of one month,—that if only one skin had been assigned to it, which would serve for its whole caterpillar state, it would with difficulty have distended itself sufficiently to keep pace with the insect's growth. The economy of Nature has therefore admirably provided the embryos of other skins, destined to be successively called into use; and this sickness of the worm, and its disinclination for food, may very probably be occasioned by the pressure of the skin, now become too small for the body which it encases.

At the end of the third day from its first refusal of food, the animal appears, on that account much wasted in its bodily frame; a circumstance which materially assists in the painful operation of casting its skin: this it now proceeds to accomplish. To facilitate this moulting, a sort of humor is thrown off by the worm, which spreading between its body and the skin about to be abandoned, lubricates their surfaces, and causes them to separate the more readily. The insect also emits from its body silken traces, which, adhering to the spot where it rests, serve to confine the skin to its then existing position. These preliminary steps seem to call for some considerable exertion, as after them the worm remains quiet for a short space of time, to recover from its fatigue. It then proceeds, by rubbing its head among the leafy fibres surrounding it, to disencumber itself of the scaly covering. Its next effort is to break through the skin nearest to the head, which, as it is there the smallest, calls for the greatest exertion; and no sooner is this accomplished and the two front legs are disengaged, than the remainder of the body is quickly drawn forth, the skin being still fastened to the spot in the manner already described.

This moulting is so complete, *that not only is the whole covering of the body cast off, but that of the feet, the entire skull, and even the jaws, including the teeth.* These several parts may be discerned by the unassisted eye; but become very apparent when viewed through a magnifying lens of moderate power.

In two or three minutes from the beginning of its efforts the worm is wholly freed, and again puts on the appearance of health and vigor; feeding with recruited appetite upon its leafy banquet. It sometimes happens that the outer skin refuses to detach itself wholly, but breaks and leaves an annular portion adhering to the extremity of his body, from which all the struggles of the insect cannot wholly disengage it. The pressure thus occasioned induces swelling and inflammation in other parts of the body; and, after efforts of greater or less duration, death generally terminates its suffering.

Worms newly freed from their exuvie are easily distinguished from others by the pale color and wrinkled appearance of their new skin. This latter quality, however, soon disappears, through the repletion and growth of the insect, which continues to feed during five days. At this time its length will be increased to half an inch; when it is attacked by a second sickness, followed by a second moulting, the manner of performing which is exactly similar to the former. Its appetite then again returns, and is indulged other five days, in the course of which time its length increases to three-quarters of an inch: it then undergoes its third sickness and moulting. These being passed in all respects like the former, and five more days of feed having followed, it is seized by its fourth sickness, and casts its skin for the last time in the caterpillar state. The worm is now about one and a half or two inches long. This last change being finished, the worm devours its food most voraciously, and increases rapidly in size during ten days.

The silk-worm has now attained to its full growth, and is a slender caterpillar from two and a half to three inches in length. (See Plate, Fig. 1.) The peculiarities of its structure may be better examined now than in its earlier ages. It can readily be seen that the worm has twelve membranous rings round its body, parallel to each other; and which, answering to the movements of the animal, mutually contract and elongate. It has sixteen legs, in pairs: six in front, which are covered with a sort of shell or scale, and are placed under the three first rings, and cannot be either sensibly lengthened, or their position altered. The other ten legs are called holders: these are membranous, flexible, and attached to the body under the rings, being furnished with little hooks, which assist the insect in climbing. The skull is enclosed in a scaly substance, similar to the covering of the first six legs. The jaws are indented or serrated like the teeth of a saw, and their strength is great, considering the size of the insect. Its mouth is peculiar, having a vertical instead of an horizontal aperture; and the worm is furnished with eighteen breathing holes, placed at equal distances down the body, nine on each side. Each of these holes is supposed to be the termination of a particular organ of respiration. On either side of the head, near to the mouth, seven small eyes may be discerned. The two broad appearances higher upon the head, which are frequently mistaken for eyes, are bones of the skull. The two apertures through which the worm draws its

silk filament are placed just beneath the jaw, and close to each other; these being exceedingly minute.

At the period above-mentioned the desire of the worm for food begins to abate: the first symptom of this is the appearance of the leaves nibbled into small portions and wasted. It soon after entirely ceases even to touch the leaves; appears restless and uneasy; erects its head; and moves about from side to side, with a circular motion, in quest of a place wherein it can commence its labor of spinning. Its color is now light green, with some mixture of a darker hue. In twenty-four hours from the time of its abstaining from food, the material for forming its silk will be digested in its reservoirs; its green color will disappear; its body will have acquired a degree of glossiness, and have become partially transparent toward its neck. Before the worm is quite prepared to spin, its body will have acquired greater firmness, and be in a trifling measure lessened in size.

"The substance," says Mr. Porter, "of which the silk is composed, is secreted in the form of a fine yellow transparent gum in two separate vessels of slender dimensions, wound, as it were, on two spindles in the stomach; and if unfolded, these vessels would be about ten inches in length." This statement is proved to be erroneous, as the reader will perceive, at the conclusion of this chapter.

When the worm has fixed upon some angle, or hollow place, whose dimensions agree with the size of its intended silken ball or cocoon, it begins its labor by throwing forth thin and irregular threads. (See Plate, Fig. 2.) which are intended to support its future dwelling.

During the first day, the insect forms upon these a loose structure of an oval shape, which is called floss silk, and within which covering, in the three following days, it forms the firm and consistent yellow ball; the laborer, of course, always remaining on the inside of the sphere which it is forming.†

The silken filament, which when drawn out appears to be one thread, is composed of two fibres, unwound through the two orifices before described; and these fibres are brought together by means of two hooks, placed within the silk-worm's mouth for the purpose. The worm rests on its lower extremity throughout the unwinding operation, and employs its mouth and front legs in the task of directing and uniting the two filaments. The filament is not wound in regular concentric circles round the interior surface of the ball, but in spots, going backward and forward with a sort of wavy motion. This apparently irregular manner of proceeding is plainly perceptible when the silk is being reeled off the ball; which does not make more than one or two entire revolutions while ten or twelve yards of silk are being transferred to the reel.

At the end of the third or fourth day, the worm will have completed its task; and we have then a *silk cocoon*. (See Plate, Fig. 3.) with the worm imprisoned in its center; the cocoon being from an inch to an inch and half long, and of a yellow or orange color.

When the insect has finished its labor of unwinding, it smears the entire internal surface of the cocoon with a peculiar kind of gum, very similar in its nature to the matter which forms the silk itself; and this is no doubt designed as a shield against rain or the humidity of the atmosphere, for the chrysalis in its natural state; when of course it would be subject to all varieties of weather. The silken filament of which the ball is made up, is likewise accompanied, throughout its entire length, by a portion of gum, which serves to give firmness and consistency to its texture; and assists in rendering the dwelling of the chrysalis impervious to moisture. This office it performs so well that when, for the purpose of reeling the silk with greater facility, the balls are thrown into basins of hot water, they swim on the top with all the buoyancy of bladders; nor, unless the ball be imperfectly formed, does the water penetrate within until the silk is nearly all unwound. In the Plate, Figure 4, the cocoons are drawn two-thirds of the usual size, and are shown with part of the outward floss silk removed.

The continual emission of the silken material during the formation of its envelop, together with its natural evaporation, uncompensated by food, causes the worm gradually to contract

* Porter's "Treatise on the Silk Manufacture," p. 111.

† If at this time any of the threads intended for the support of the cocoon should be broken, the worm will find, in the progress of its work, that the ball, not being properly poised, becomes unsteady, so that the insect is unable properly to go forward with its labors. Under these circumstances the worm pierces and altogether quits the unfinished cocoon, and throws out its remaining threads at random wherever it passes; by which means the silk is wholly lost, and the worm, finding no place wherein to prepare for its change, dies without having effected it. It may sometimes happen, but such a thing is of unfrequent occurrence, that the preparatory threads before-mentioned are broken by another worm working in the neighborhood, when the same unsatisfactory result will be experienced.

[Obs. on the Culture of Silk, by A. STEVENSON.

‡ Mr. Robinet, of Paris, made the following curious calculation on the movements a silk-worm must make in forming a cocoon supposed to contain a thread of 1500 metres. It is known, says Mr. Robinet, that the silk-worm, in forming his cocoon, does not spin the silken filament in concentric circles round the interior surface of the ball, but in a zigzag manner. This it effects by the motions of its head. Now if each one of these motions gives half a centimetre of the silken filament, it follows that the worm must make 300,000 motions of its head to form it; and if the labor requires 72 hours in the performance the creature makes 100,000 motions every 24 hours, 4,166 per hour, 69 per minute, and a little more than one in a second!

in bulk; it becomes wrinkled, and the rings of its body approach nearer to each other and appear more decidedly marked. When the ball is finished, the insect rests awhile from its toil, and then throws off its caterpillar garb. If the cocoon be now opened, its inhabitant will appear in the form of a chrysalis or aurelia, in shape somewhat resembling a kidney-bean (See Plate, Figure 5,) but pointed at one end, having a smooth brown skin. Its former covering, so dissimilar to the one now assumed, will be found lying beside it.

The account which has been given of the progressions of the silk-worm shows that, in its various modifications, the *animal organization of the insect has been always tending toward its simplification*. Count Dandolo, writing upon this subject, observes, "Thus the caterpillar is in the first instance composed of animal, silky, and excremental particles: this forms the state of the *growing caterpillar*: in the next stage it is composed of animal and silky particles: it is then the *mature caterpillar*: and lastly, it is reduced to the animal particles alone: and is termed in this state the *chrysalis*. The poet Cowper, in the following lines, beautifully illustrates this subject:

The beams of April ere it goes,
A worm, scarce visible, disclose;
All winter long content to dwell
The tenant of his native shell.
The same prolific season gives
The sustenance by which he lives,
The mulberry leaf, a simple store,
That serves him—till he needs no more!
For, his dimensions once complete,
Thenceforth none ever sees him eat:
Though till his growing time be past
Scarce ever is he seen to fast.
That hour arrived, his work begins;
He spins and weaves, and weaves and
spins;
Till circle upon circle, wound

Careless around him and around,
Conceals him with a veil, though slight,
Impervious to the keenest sight.
Thus self-enclosed, as in a cask,
At length he finishes his task:
And, though a worm when he was lost,
Or caterpillar at the most,
When next we see him, wings he wears,
And in papilio pomp appears;
Becomes oviparous; supplies
With future worms and future fies
The next ensuing year—and dies!
Well were it for the world if all
Who creep about this earthly ball,
Though shorter-lived than most he be,
Were useful in their kind as he.

It has been already noticed that the progressions of the insects are accelerated by an increase of temperature; and some variation will equally be experienced where different modes of treatment are followed; and, in particular, where different periods of the year are chosen in which to produce and rear the worm. Malpighius, in his "Anatomy of the Silk Worm," says, that worms which he hatched in May were eleven days old ere they were attacked by their first sickness; others hatched in July were ten days, and those brought forth in August nine days, before they refused their food, preparatory to their first moulting. Eight days appear to be the most usual term for their first attack; and by his judicious treatment Count Dandolo shortened even this term by two days. In Europe, except where recourse is had to artificial aid, the term of the caterpillar state is usually that which has been already mentioned.

Sudden transitions from cold to heat, or *vice versa*, are highly injurious to the silk-worm; but it can bear a very high degree of heat, if uniformly maintained, without sustaining injury. Count Dandolo observed, that "the greater the degree of heat in which it is reared, the more acute are its wants, the more rapid its pleasures, and the shorter its existence." Monsieur Boissier de Sauvagnes made many experiments on this point. One year, when by the early appearance of the mulberry leaves, which were developed by the end of April, he was forced to hurry forward the operations of his filature, he raised the heat of the apartment in which the newly hatched worms were placed to 100°; gradually diminishing this during their first and second ages to 95°. In consequence of the animal excitement thus induced, three elapsed only nine days between the hatching and the second moulting inclusively. It was the general opinion of those cultivators who witnessed the experiment, that the insects would not be able to exist in so intensely heated an atmosphere. The walls of the apartment, and the wicker hurdles on which the worms were placed, could scarcely be touched from the great heat, and yet all the changes and progressions went forward perfectly well, and a most abundant crop of silk was the result.

The same gentleman, on a subsequent occasion, exposed his brood to the temperature of 93° to 95° during their first age; of 89° to 91° in the second age; and remarked that the attendant circumstances were the same as in his former experiment, the changes of the worm being performed in the same space of time; whence he came to the conclusion, that it is not practicable to accelerate their progress beyond a certain point by any superadditions of heat. In both of these experiments the quantity of food consumed was as great as is usually given during the longer period employed in the common manner of rearing. After the second moulting had taken place in the last experiment, the temperature was lowered to 82°; and it is remarkable that the worms occupied only five days in completing their third and fourth changes, although others which had been accustomed to this lower degree from their birth occupied seven or eight days for each of these moultings. It would therefore seem that the constitution of the insects can be affected, and an impetus given to their functions at the

period of their first animation, which accompanies them through their after stages. So far from this forcing system proving injurious to the health of silk-worms, M. de Sauvages found that his broods were unusually healthy; and that while the labors of cultivation were abridged in their duration, much of the attendant anxiety was removed.

Like other caterpillars, the silk worm is not a warm-blooded animal, and its temperature is therefore always equal to that of the atmosphere in which it is placed. In the silk-producing countries, where modes of artificial heating have not been studied practically and scientifically, the difficulty and expense that must attend the prosecution of this heating system, form abundant reasons why it cannot be generally adopted. The great susceptibility of the insect to atmospheric influences would also in a great degree render unsuitable the more common arrangements for the purpose. The plan of warming apartments by means of stoves, in its passage through which the air becomes highly heated before it mixes with and raises the general temperature of the air in the chamber, is liable to this inconvenience—that the portion so introduced, having its vital property impaired by the burning heat through which it has passed, injures proportionably the respirable quality of the whole atmosphere; an effect which is easily perceptible by those who inhale it. A better plan of heating has lately been suggested, and is rapidly coming into practice, viz., of warming buildings by a current of hot water (an American invention,) which is, by a very simple process, kept constantly flowing in close channels through the apartment, where it continually gives off its heat by radiation; and the degree of this being far below the point which is injurious to the vital quality of air, the evil before alluded to is avoided. If the expense of fuel be not too great, as compared with that of the labor which would be saved by this invention, the adoption in silk countries of such a mode of raising and regulating the temperature might, probably, prove advantageous.

The silk-worm remains in the form of a chrysalis for periods which, according to the climate or the temperature wherein it may be placed, vary from fifteen to thirty days. In India, the time is much shorter; in Spain and Italy, eighteen to twenty days. In France three weeks; and in the climate of England, when unaccelerated by artificial means, thirty days will elapse from the time the insect begins to spin until it emerges in its last and perfect form. It then throws off the shroud which had confined it in *seeming lifelessness*, and appears as a large moth of a grayish-white color, furnished with four wings, two eyes, and two black horns or antlers which present a feathery appearance (See Plate, Fig. 6.).

If left until this period within the cocoon, the moth takes immediate measures for its ex-trication: ejecting from its mouth a liquor with which it moistens and lessens the adhesiveness of the gum wherewith it had lined the interior surface of its dwelling, and the insect is enabled, by frequent motions of its head, to loosen without breaking, the texture of the ball; then using its hooked feet, it pushes aside the filaments and makes a passage for itself into light and freedom. It is erroneously said that the moth recovers its liberty by gnawing the silken threads; but it is found, on the contrary, that if carefully unwound, their continuity is by this means rarely broken.

One of the most remarkable circumstances connected with the Natural History of silk-worms, is the degree in which their bulk and weight are increased, and the limited time wherein that increase is attained. Count Dandolo, who appears to have neglected nothing that could tend to the right understanding of the subject, and to the consequent improvement of the processes employed, had patience enough to count and weigh many hundred thousand eggs, as well as well as follow out to the ultimate result his inquiries respecting their produce. He found that on an average sixty-eight sound silk-worms' eggs weighed one grain. One ounce,* therefore, comprised, 39,163 eggs. But one-twelfth part of this weight evaporates previous to hatching, and the shells are equal to one-fifth more. If, therefore, from one ounce, composed of 576 grains, 43 grains be deducted for evaporation, and 115 for the shells, 413 grains will remain, equal to the weight of 39,163 young worms; and at this rate, 54,526 of the insects when newly hatched, are required to make up the ounce. After the first casting of the skin, 3,340 worms are found to have this weight, so that the bulk and weight of the insects have in a few days been multiplied more than *fourteen times*. After the second change 610 worms weigh an ounce, their weight being increased in the intermediate time six fold. In the week passed between the second and third ages, the number of insects required to make up the same weight, decreases from 610 to 144, their weight being therefore more than quadrupled. During the fourth age, a similar rate of increase is maintained: thirty-five worms now weigh an ounce. The fifth age of the caterpillar comprises nearly a third part of its brief existence, and has been described, by an enthusiastic writer on the subject, as the happiest period of its life, during which it rapidly increases in size, preparing and secreting the material it is about to spin. When the silk-worms are fully grown, and have arrived at their period of finally rejecting food, six of them make up the weight of an ounce. They have, therefore, since their last change, again added to their weight *six fold*.

It is thus seen that, in a few short weeks, the insect has multiplied its weight more than

* This ounce contains 576 grains; 8.5925 of these grains equal seven grains troy. One ounce avoirdupois is therefore equal to about 533 grains, and between 11-12 and 11-13 ounce avoirdupois equals one of the above ounces.

nine thousand fold! From this period, and during the whole of its two succeeding states of being, the worm imbibes no nourishment, and gradually diminishes in weight: being supported by its own substance and appearing to find sufficient occupation in forming its silken web, and providing successors for our service, without indulging that grosser appetite which forms the beginning and the end of their desires during their caterpillar existence.

The moth enjoys its liberty for only a brief space. Its first employment is to seek its mate; after which the female deposits her eggs; and both in the course of two or three days after, end their being.

"FORMATION OF SILK." By M. H. Straus, of Darchheim.—"It is generally admitted by naturalists that the thread of the caterpillar is produced by a simple emission of liquid matter through the orifice of the spinner, and that it acquires solidity at once from the drying influence of the air. It was easy to entertain such an hypothesis, for nothing is more simple than the formation of a very fine thread by such a process. But a little reflection will soon show us, even *a priori*, that it is not possible; for how can we comprehend that so fine a fibre, liquid at the instant of its issue from the aperture, should *instantly* acquire such a consistence as to bear the weight of the animal suspended by it, and at the same time that it is rapidly produced? Though the fluid, holding the silk in solution, should be quickly volatilized, it must still be a matter of conjecture, how the animal suspended by his thread could be able to arrest its issue, holding on only by the thread itself, for it cannot pinch the thread, seeing that it is only in a liquid state inside, and the thread cannot be glued to the edge of the opening, as its rapid adhesion would prevent its issue while the animal is spinning. A little examination would satisfy us that silk cannot be produced in this manner, but that it is secreted in the form of silk in the silk vessels, and that the spinning apparatus *only winds it*. The thread is produced in the slender posterior part of the vessel, the inflated portion of which consists of the reservoir of ready formed silk, where it is found in the form of a skein; each thread being rolled up so as to occupy in the silk-worm (*Bombyx mori*) a space of only about a sixth part of the real length of the skein. The fact is shown by the following experiment I made for the purpose of ascertaining whether the silk is formed in the body of the caterpillars:

"Take one of the animals when about to form its cocoon, clean it in common vinegar, in which it may remain from four to six hours, open it on the back and extract the silk vessels, there being one on each side of the alimentary canal. Take them up by the hinder end. Just where they begin to swell (farther back the silk is not solid enough), and draw them out. The membrane forming the vessel is easily torn open, and the contents expand to six or seven times its original length. The skein having attained its full length by the letting out of its gathers, we obtain a cord perfectly equal in size throughout except at the end, where it is attenuated. This cord resembles a large horse-hair, and constitutes what fishermen call "*Florence hair*." I ought to add that in simply drawing out the silk vessel, the Florence hair is found enveloped in a golden yellow gummy matter, forming the glutinous portion which the worm fastens its thread. This must be got rid of by drawing the cord through the fold formed on the inside of the joint of the left fore-finger, converted into a canal by applying to it the end of the thumb. The glutinous substance and the membranes being thus separated we have the *naked hair*. In this state, before the silk becomes dry and hard, not only will it be indefinitely divided longitudinally, which proves its fibrous structure, but in trying to split it by drawing it transversely, the little filaments of silk which form it are perfectly separated, making a bundle of extremely fine fibrils."

For some beautiful lines, "The Silk Worm's Will," see the Housewife's Department.

COST AND PROFIT OF CULTIVATING CORN AND COTTON:

I PERCEIVE that a good deal has been lately said in Massachusetts about the cost of growing Indian corn, and am not a little surprised to find the expense of cultivating an acre set down by some at \$50. I presume a large quantity of manure is used, at an extravagant price. Others estimate the expense at \$6 to \$7 per acre. This must be where no manure is used.

I have thought it might not be without interest to some of your readers to know what it costs us to grow both corn and cotton here in South Carolina, and to be enabled to form some idea of the profits of *our farming*. Living about the middle line of the State, and cultivating light upland which produces crops about the average of those of this State, and I may add, I think, of Georgia, I will tell you what, *I know*, are the expenses and profits of Agriculture here.

On land in good heart, without more manuring than to haul out and put on the poor spots what we make, I may say *casually*, and can spare from our gardens and potato patches, we consider it a very fair average crop to gather from an

acre 10 bushels of corn, or 150 lbs. of (ginned) cotton. As our laborers are almost necessarily engaged for the year, and the work-animals and agricultural implements are owned by the farmer, there may be some difficulty in estimating the cost of any special work. But it is generally agreed, and I think fairly, that a hand including his finding and lost time costs about 50 cts. per day, and a hand and horse \$100. In other words, that these sums are about fair daily wages. The expense, then, of cultivating one acre of corn at these rates of wages will be as follows:

| | |
|--|---------|
| To Breaking up | \$1 00 |
| " Crossing both ways to plant | 25 |
| " Planting | 12½ |
| " Replanting and thinning | 12½ |
| " Running round corn, 2 furrows | 25 |
| " Plowing narrow way, 1 do. | 12½ |
| " Plowing out thoroughly, 4 to 5 do. | 50 |
| " do. do. do. 2 do. | 25 |
| " do. do. do. 2 do. or hoeing to lay by | 25 |
| " Gathering fodder and stacking or housing | 50 |
| " do. corn, shucking and housing | 25 |
| " Rent of land | 1 50 |
| Total | \$5 12½ |

This is about the cheapest method I know of cultivating our light upland, and the one I have used with reasonable success for many years. Most planters use more furrows and hoe more also, without, I believe, any compensating increase of production. The land I am speaking of seldom rents for more than \$1 per acre. But that is the price of detached fields, and does not include the use of all, generally of none of the necessary buildings of a farm. Besides, to keep this land in good heart, it should be rested at least once in three years; so that I have not over estimated the rent here.

The expenses of cultivating an acre of cotton may be estimated as follows:

| | |
|--|---------|
| To Breaking up | \$1 00 |
| " Bedding and preparing for planting | 1 00 |
| " Planting | 50 |
| " Replanting and thinning | 50 |
| " Plowing and scraping at least four times | 2 00 |
| " Hoeing do. do. | 2 00 |
| " Gathering | 2 50 |
| " Ginning, Packing and loss on rope and baggings | 1 50 |
| " Rent of land | 1 50 |
| Total | \$12 50 |

The fodder gathered from an acre of corn producing 10 bushels, will be about 120 lbs., and may be worth *on the place* \$1. The corn to pay wages must then bring about 41 cts. *at the crib*. These are about the prices realized for these articles on the average of the last five years: and should cotton or any other staple for sale abroad continue to be extensively cultivated, they will no doubt be kept up to these points. But any change that would induce a *large* increase of the corn crop under present circumstances, or until our population becomes far denser and our cities much larger and more numerous, would reduce the price to a merely nominal one.

To pay the rate of wages stated, the price of the 150 lbs. of cotton grown on an acre at the estimated cost of \$12 50 must be 8 1-3 cts. per lb. net, *at the gin house*. But for five years past the net price at the gin house has scarcely averaged 6 cts., and establishing an annual loss of 25 cts. in its culture in South Carolina and I believe in Georgia.

There is another way in which this matter may be viewed; allowing for Sundays, holidays, rainy days, and sickness, the number of days that a hand will actually work is about 280 per annum; and his wages, therefore, at 50 cts. per day, will be \$140 per annum, out of which of course all expenses incurred for his support, for managing work-animals, implements, &c., are to be defrayed: which sum it is thought should be realized to make our Agriculture reasonably profitable. Now the amount of corn necessary and usually grown and consumed on a cotton plantation, is about 80 bushels per hand, which, with the fodder, I have estimated as worth \$41. The average production of cotton per hand with us cannot exceed

1200 lbs., which at 6 cts. is worth \$72. The whole in a gross income of the hand then, is only \$113. And if we allow that in the 250 days, he puts his cotton in market, thereby advancing its price $\frac{1}{4}$ ct., or \$3 on the whole: the gross annual income will be \$116, or \$24 less than *fair wages* and rent of land.

It is true that some planters in South Carolina and Georgia make more to the acre and to the hand than I have stated. Some make wages and rent; a few perhaps more. But if *on the whole* they lose at present prices, the condition of the country must be growing worse, while those who make less than the average, which is not underrated, I am sure, must be rapidly approaching bankruptcy.

Perhaps I should, before concluding this article, state what are our hopes, and why we do not all in a body fly from our homes and the ruin apparently awaiting us here, to seek the richer soils of the south-west. Our first hope is, that by a chance in the policy of our Government, our expenses will be reduced and the price of our staple enhanced so as to enable us to obtain fair wages for our labor. But as yours is not a political journal I will not enlarge on that exciting topic. Our next hope is that all the planters living near markets, or on navigable streams, and railroads, will grow for market, corn which pays wages now, at least to such an extent as to exclude all corn grown abroad, and corn-fed pork and beef from consumption here. This will increase their profits, and to the extent it may diminish the cotton crop tend to raise the price of it. We hope also that much labor now devoted to cotton in all sections will be diverted to turpentine, tobacco, sugar, rice, timber cutting, manufactures, &c., &c.; so as to reduce the aggregate cotton crop still more. Our last, and perhaps most reliable hope is, that we will cease to clear more land, and by turning our attention seriously to manuring, marling, &c., so increase the production of our acres, that we shall in spite of all competition realize fair rents and wages. This last means of arresting our downward progress each individual can resort to for himself, and by himself, without looking to the action of Government or the community at large for aid: and few, I trust, will fail to do it effectually and speedily. S. B.

The preceding suggests that it ought to be universally regarded as a most essential part of the education of every farmer's and planter's son in the Union; that he should be taught at school, and his father should enforce it by illustration at home—that *keeping exact accounts* of outlay and income, is as indispensable to avoid ruin and bankruptcy in the practice of Agriculture as it is in the pursuits of *commerce*, or any other branch of business. An arithmetic is wanting with its rules applicable to, and its examples drawn from agricultural operations. Is there, in short, anything in which so much reform is needed, as in our systems of instruction of American youth destined to rural pursuits? Half their time is spent in learning Latin and Greek, which they forget in fewer years than were required to learn them; and in studying how to “speak the speech” “My name is Norval, on the Grampian hills,” &c., and such other recitals of warlike deeds and forensic displays, extracts from which make up our school “*READERS*,” and which serve to pervert and corrupt their youthful imaginations: leading them to dwell on topics and to contemplate ways to advancement and fortune which are utterly incompatible with the real welfare of society in this country! Instead of thus heating their imagination with barbarous thoughts of “bended bow and quiver full of arrows,” how much better would it be to teach them the true principles to be sought in the form of domestic animals and in the structure of agricultural implements, and how so to keep accounts of all their operations, and outlays, in labor and money, thus to be enabled at once to detect any one of those small leaks that often sink great ships. How much better to teach them how to analyze the properties and to understand the force and value of every thing connected with the pursuit which is to be the support and the business of their lives!

Alas! to get for their sons *life commissions*, and high and sure pay in the military; and to qualify them for those parasitical professions that in our *Republican land* lead, with the least labor, to distinction and fortune, seems to be the universal aim; and hence the general tendency to flatter power, and the ready submission to being ridden by demagogues. It is not to be doubted, that many thousand American agriculturists are now on the road, almost in a gallop to ruin, who do not dream of the precipice they are approaching; and all for the want of that

sort of education, which would beget a *habit of thinking*, and a faculty for close and accurate calculation. In this way is it that, every year, swarms continue to leave the parent lives in the old States, without ever dreaming of the true causes and influences by which they were prompted to wing their way to distant wild and unwholesome regions, &c.

This must ever be the case while education instructs in every useless and frivolous thing, rather than in what concerns the *rights and the interests of landholders*; and while landholders allow themselves to be taxed for all sorts of schools and surveys and works, except such as shall teach the rising generation to increase the products of the earth, and provide the means of realizing their value in the best markets, with the least possible deduction being made therefrom, for the support of parasitical classes and interests.

We are reminded here of a statement which has just fallen under our eye in a work just received, and which so far proves very interesting, on the "Industry of the Rhine." The yearly wages on the Rhine are, for men \$25 to \$35 per annum—women \$20 to \$25. The author says, that from official documents, it appears that the *consumption of meat in the Prussian towns*, where a slaughtering tax is levied, and which affords a test for calculation, rose on an average in the twelve years, from 1830 to 1842, from 73 5-6 lbs. per head, at which it had stood for the twelve years preceding, up to 83 5-6 lbs. per head—being a fraction less than a quarter of a pound a day. Compare this with a Georgia planter, whose practice may be considered as a fair average—Doctor W., with a family of fifty-two blacks and eight whites, sixty all told, provides six thousand weight of pork and three thousand of beef; being an average of 150 lbs. a year, or as nearly as may be double that which an unprejudiced inquirer sets down as the ascertained average consumption of the white population of Prussia, one of the best governed countries in Europe.

There are many slaves on southern plantations, who make and sell more than the wages of the white laboring women in Europe. Is it then to be wondered at that many thousands arrive here weekly? Who does not see that the number will be increased beyond calculation, as steam in its illimitable progress and influence shall diffuse knowledge and cheapen transportation! But let us return to make the short statement of the produce of an ordinary Rhinish farm of two hundred acres. Be it remembered that their cattle are kept up and soiled, and that they treasure *manure*, as we treasure money, for the reason that they *know it is money*.

"One horse to twenty acres is the proportion of the best farmers; but then fifteen to twenty-five oxen and cows would be the smallest number of horned cattle on one hundred acres, with one or two hundred sheep. On a peasant's farm of fifty acres, we have found four horses, fifteen head of horned cattle, and seventy to eighty sheep."

"In the present style of farming, an estate of two hundred acres in the Duchy of Cleves needs ten men, and ten women or boys, as farm servants. We may assume that four horses, six oxen, fifteen cows, ten pigs, and one hundred sheep are kept. This stock will acquire on a close calculation, ninety acres, together with the stubble turnips of thirty acres of wheat or rye. Thirty acres of wood will give a scanty supply of firing, which will need to be eked out with coals. Ten acres, yielding three hundred bushels of rye, or of equivalents in potatoes and culinary vegetables, are devoted to grow food for the inmates. We have then seventy acres for market crops, with (at Goch) the profit on the sale of milk, fat cattle, wool, clover-seed, linseed, the gain on the brewery and distillery, as the revenue of the land-owner; from which, however, wages, wear and tear of house, offices, and implements, together with building alterations, must be deducted.

The land producing the market crops may therefore be estimated to yield as follows:

| | | | |
|---|---------------|------------|--------|
| 20 acres of potatoes | 5000 bushels, | at 1s. 6d. | £375 0 |
| 20 " barley | 650 " | 2 0 | 65 0 |
| 20 " wheat | 600 " | 3 6 | 105 0 |
| 10 " flax or rape | .. | .. | 150 0 |
| 20 " clover-seed | 80 cwt | at 45 0 | 180 0 |
| 10 " linseed | 25 " | 30 0 | 37 10 |
| 100 sheep, wool, at 5 lbs. | 500 lbs | 1 8 | 42 13 |
| Total | | | £955 3 |
| Deduct interest on £2000 stock | | | £100 |
| Wages | | | 105 |
| Repairs of utensils, &c. | | | 50 |
| Fuel (coals), veterinary bill, &c. | | | 60 |
| | | | 310 0 |
| Total | | | £645 3 |

The profit on milk and cattle sold may be set off against the butcher's bill for extraordinaries, and if £45 be estimated to meet the general and local taxes falling on the ground, we see that £600 per annum may be cleared by a farmer who would live with his servants off 200 acres in the Duchy of Cleves. If the farmer keeps a gentleman's establishment united with his farm, he must deduct the expense of it from his gross profit; in doing which it will probably appear that as much comfort and luxury may be purchased for that sum in Germany as £1200 per annum would command in England.

In all calculations of the yield of estates, it is proper (though sometimes omitted) to make full and fair allowance for house-rent, fuel, provisions, washing, and (as far as the farm supplies it) clothing, &c. In other words what, if he stood in the street with the money in his pocket it would cost him to buy all the conveniences and luxuries which he enjoys on his estate. In town, he would have to pay for his house and stable the interest of at least \$10,000 to begin with, and then he must forego or pay hard money for every radish and strawberry, and every ounce of butter and meat, and bread, and every drop even of the cream he puts without measure in his *country tea and coffee*. Ah, be it remembered after all, that man made the town, while God made the country. Give us the country forever. *Oh fortunatos numini si sua bona norint agricolas!*

TO RAISE OR BUY HIS BACON :

WHICH IS BEST FOR THE FARMER?—SIZE AND KIND OF HOG BEST SUITED TO IT.

ON THE HOG.—*Messrs. Fleet & Starr*: At your request I forward you an account of my mode of treating hogs. I have on my farm an orchard, containing many choice fruit trees, bearing sweet apples. They were planted expressly for hogs, apples being the principal food on which they are fed during the season; sometimes, by way of change, they receive sour apples, always fed raw, at regular hours. The food is occasionally varied by adding garden refuse, such as cabbage-leaves, cauliflower, &c. together with the slops from the house. Unless so fed, a more expensive animal can scarcely be kept, especially in a country where corn can be sold for from 62½ to 75 cents per bushel, and other grain in proportion. This is a luxury my hogs never partake of. If corn and apples were worth the same per bushel, I would feed apples in preference: the pork is sweeter, and fifty per cent. whiter; it may lose a little in boiling; if it does, however, I have never noticed it. They are the most prolific animal we have, producing at a birth numbers varying from six to twelve twice in each year, if found desirable by the owner. In eleven years a single sow, averaging at each litter six pigs, will, in ten generations, produce six millions four hundred and thirty-four thousand eight hundred and thirty eight pigs. Extend the calculation to the twelfth generation, and the result would be as great a number as all Europe could support, and to the sixteenth generation, the whole world would be overstocked.*

[* The natural term of the hog's life is little known, for the plain reason that every man's hand is raised against him, as if he were *hostis humani generis*, a pirate and an outlaw! But it is related by Rev. GILBERT WHITE on this subject, that a neighbor of his kept a half-bred Bantam sow, "who was as thick as she was long, and whose belly swept the ground until she was seventeen, when she showed some tokens of age by the decay of her teeth and the decline of her fertility, and was then fattened and killed." For ten years she produced two litters annually of about ten and once above twenty at a litter. At a moderate computation, she was allowed to have been the mother of some *three hundred pigs!*

The hog affords a striking example of the effects of emasculation, which, says the same revered and amiable author, brings man, beast and bird, to a resemblance to the other sex. Thus, castruchs have smooth, unmuscular arms, thighs and legs; broad hips, and beardless chins, and squeaking voices. Capons have small combs and gills, and have a pallid look, like pullets, about the head; and barrow-hogs have small tusks, like sows; but if left in possession of their masculine faculties unabridged, their tusks, on which they rely as the horseman on his sword, grow to enormous size. On our late tour to the South, we were presented with a brace of these warlike weapons, sharp pointed as a Cossack's spear, and curved like a Turkish cimeter. They had been distinguished in the days of boarish vigor by a famous grunter, property of Col. Huger, the accomplished and indefatigable Postmaster of Charleston, and were large enough for, and so shaped as to suggest their being made into, handles for horse-whips.

But a certain author on Husbandry carries the mutilation or loss of sexual developments still farther; for he says the loss of the *insignia* alone, is sometimes followed by a loss of the function

When my sows are pregnant they are kept apart from other hogs; at the birth of the young pigs they are removed for a few hours from the dam, as they are in danger of being injured by her motions. She is fed judiciously for the first five days, after which she is allowed a full quantum of food three times each day, but never overfed. Her troughs are cleaned after each meal, and her pen daily, after which it is littered with fine broken straw.

The pigs are daily accustomed to feed on milk mixed with bran, and at the age of two months weaned. They are always kept in confinement, converting rubbish into manure. My second brood of pigs are sent to the New-York market, and are sold to the packets as roasters.

The store hogs are wintered chiefly on sugar beets and carrots, occasionally boiled potatoes, and frequently charcoal dust, which keeps them in perfect health; their legs are often rubbed with a corn cob, to open the issues and cause the blood to circulate freely, otherwise staggers may ensue. I fattened two hogs year before last entirely on sweet and sour apples, fed alternately. For three or four months they received no other food, except occasionally charcoal; water even was denied them. They weighed, when killed, two hundred and fifty pounds each; the whole hog was covered with a very thick layer of fat, perfectly white and firm; the skin was thin, and the perk pronounced by connoisseurs exceedingly fine and sweet; the hams were not inferior to Westphalia.

This last year, 1845, on the first of October, I confined sixteen hogs in an enclosure about sixty feet square, in one corner of which I placed all my pumice, after having extracted the cider, and permitted the hogs three times each day to partake of it one hour, in which time they completely filled themselves to repletion. They were allowed no other food during October and November. The first week in December they were killed, and fatter animals I never saw. They were sold in New-York for two cents per lb. above the market price. I am, &c. R. L. P.

Editorial Remarks.—We deem the experiments of Mr. Pell of great importance, especially in the older States. If farmers can cultivate fine fruit, send the finest to market, feed the refuse to stock, and thus avoid fattening their hogs, in particular, on grain, a very considerable per centage will be added to the profit of farming. [New-York Farmer and Mechanic.]

The question between raising hogs and buying pork is one which admits of and demands nice and cautious calculation. Here, for example, in this essay, the writer says their *principal* food is *apples* “during the season;” but the question arises, What proportion does the season of apples bear to the life-time of the hog? What is the value of land thus appropriated “expressly” to the growth of “sweet apples” for hogs, and the cost or value of other things on which they must live during at least three-fourths of their lifetime, and also of the labor employed in attending them? Then, again, the breeding-sows are to be fed all the year round. There is, in fact, no question of rural economy which, for its solution, depends on so many and such various considerations, before we can decide with confidence and certainty whether it be most economical to buy or rear our own meat.

Generally it is better to breed, raise, and manufacture, as much as possible, within ourselves; because then we are sure that, so far, there is no actual outlay of money; and “a penny saved is two pence got,” as Poor Richard says. Yet there is such a thing, and that a very common one, as “saving at the spigot and losing at the bung.” In many parts of the country, hogs superinduce the necessity of much additional outlay for fencing. They are, like some men and nations, prone to mischief and depredation, with this exception in their favor, that they wait to be prompted by the stings of hunger, and do not wantonly break through or over, and pass beyond their legitimate bounds. Then, again, as we know, in many parts of the United States, great allowance in the number to be bred and reared to a certain age must be made for thieves, who steal a large proportion; so that out of a given number in the fields and woods, the owner never knows how many he can count upon to kill, until they are “put up” to be fattened, and sometimes not even then. May it not be assumed that the hogs slaughtered in the United States average a consumption of a barrel and a half, or seven bushels and a half, of corn, after they are penned, besides all other expenses, which are numerous and hard to be defined?

There can, we should think, be little doubt, that on every estate there should

itself. He had a boar so fierce and venereous that to prevent mischief his tusks were broken off; no sooner had he suffered this insulting injury than his powers *forsook* him, leading him to turn tail on those females from which no fence could before restrain him. *Ed. Farm. Lib.]*

be a certain number of "sty" hogs to consume the offal of the garden, the truck-patch, the kitchen, the dairy, and the quarters. The number to bear a certain proportion to the number of persons subsisted, and the extent of provision and arrangements for the different objects from which the offal is to be derived. For every one must be aware, that while no good manager on a farm is without abundance of milk, and butter, and a reasonable variety of wholesome and substantial fruits and vegetables, there *are* too many, again, who think of nothing but *money*, and for its sake forego all that money can buy, that is worth having, in the estimation of a reasonable and cultivated mind. Ay, is it not lamentably true, that there are many, very many, large landholders who drudge on through the year, with but a mean, scanty, inadequate supply of milk, butter, vegetables and fruit?—men who do not look ahead and make provision in time for a good, well-filled dairy, orchard, or garden; who are often without a pound of fresh, sweet, fragrant butter; without a nice, clean, cool spring; without an ice-house; without a plate of nice strawberries, or cherries, or apples, or pears, or plums, or grapes, or peaches, or a melon, or raspberry, or vegetables, except, perhaps, a few potatoes or drum-head cabbages, when these are everywhere in full season?—instead of having, of these plain and substantial things, abundance and to spare, for every one, black and white, rich and poor, on his estate! We do not deery such management, or rather gross and scandalous *mismanagement*, as a thing of rare occurrence, because then, though it might be more pointedly disgraceful to the individual, it would not be a stigma to the neighborhood. We deprecate the neglect to which we refer, as a thing *too common throughout the country*, though less so, we may hope, than it was some years since. Its connection with the subject in hand consists in the consideration that where there is this neglect of gardens, and orchards, and dairies for the sake of exclusive (we had like to have said a vulgar) devotion to a single staple crop, there can be little or no offal for hogs; and even where an orchard of "sweet apples" is planted "expressly" for hogs, it is to be presumed that at the least three-fourths of the time, and as much of the growth and weight of the hog, must otherwise be provided for.

In New-England, it is said that good managers consider the manure to be made by a pen of hogs, kept up through the year, as affording an offset against the expense of keeping them; but this can only be realized, to a certain extent, when the pen is kept well supplied with litter to be compounded with manure, and that, again, can only be done by *labor*, which, like time, is but another word for money.

We remember to have seen, last summer, on the road beyond Newburyport, Mass. a very fat, large hog, which might have stood for a picture of health and obesity. Waiting for the cars, we obtained from the owner a brief history of his life and adventures. These were very simple, resembling very much those of other lazy, fat, uneducated simpletons, who dole out their existence in *eating and sleeping*; but the sum of his big hog's *statistics* was, in the opinion of the owner, that though he had taken all the offal of his house, he "guessed" he had "cost more than he would come to!" so that, after all, "to *buy* or not to buy—that is the question;" and it would be curious to see how the calculation of sagacious men would compare, when made under apparently the same circumstances. Finally, apples may make Yankee "pickled pork" "sweeter and fifty per cent. whiter" than that of corn-fed hogs; but if you would have "hams" made into bacon "not inferior to Westphalia"—and when hams are spoken of, *bacon* is understood, not pork—let the hogs, according to our observation, which is

"some," have "woods range;" let them roam the forest, enjoying the largest liberty, cracking the beechnut, the chestnut and the acorn, snuffing the pure air and sleeping in the upturned virgin earth of the country, until the middle or last of November; let them be "put up" just long enough to increase and "harden their fat" with new corn, or, yet better, corn meal, with clean water; and having then, at from 14 to 20 months old, carried them to from 130 to 160 pounds, some time before or about Christmas, let their lives be taken, not in wantonness or malice, as men destroy each other in war, but in fulfillment of their appointed fate. The ham of hogs weighing from 130 to 160, will be from 10 to 15 pounds. It was recommended by Col. John Taylor, of Caroline, Virginia, he who prompted the landholders of the Southern States to *think*, and taught them that they had a business to be studied, and a stake in the Government to be cared for—he recommended that at the time of "putting up" hogs in autumn the plantation should be swept clean of every thing in the shape of a hog, little or big, (except the breeding-stock,) which was not under ten months old; as, if over that, and carried through another year, it would not be worth its cost.

A look at the census will show with what remarkable correspondence Indian corn and hogs jump together! In the production of these two great staples of life, Indian corn and pork, Tennessee takes the lead, while New-York produces more than four to one over Tennessee in value of "orchard products." The "swinish multitude" of Tennessee excels that of the great Empire State as 2,926,607 over 1,900,000.

| | <i>Bushels of Corn.</i> | <i>Number of Swine.</i> |
|---------------------|-------------------------|-------------------------|
| Tennessee..... | 44,986,188 | 2,926,607 |
| Kentucky..... | 39,847,120 | 2,310,533 |
| Virginia..... | 34,577,591 | 1,992,155 |
| Ohio..... | 33,668,144 | 2,099,746 |
| Indiana..... | 28,155,887 | 1,623,608 |
| North Carolina..... | 23,893,163 | 1,649,716 |
| New-York..... | 10,792,286 | 1,900,065 |

But it is remarkable in the agricultural economy of New-York, that the number of her swine is much larger than that of other States, in proportion to the quantity of Indian corn she produces, going to show that she turns other resources into pork, which, in other States, do not exist, or are neglected or otherwise disposed of. Many are doubtless reared and sold in New-York when young, on the offal of her dairies and orchards united; for with her only 10,792,286 bushels of corn, she exhibits very nearly 2,000,000 of swine. To her large flour manufactories and their offal, and her vast number of distilleries and breweries, too, may be ascribed her large number of swine in proportion to her corn; for they seem to be to these establishments as natural appendages as to redundant fields of corn. In the number of gallons produced from both distilleries and breweries, New-York claims unenviable excellence over the great corn-growing States above mentioned—as, for instance—

| | <i>Distilleries.</i> | <i>Gallons produced.</i> | <i>Breweries.</i> | <i>Gallons produced.</i> |
|---------------------|----------------------|--------------------------|-------------------|--------------------------|
| New-York..... | 212 | 11,973,815 | 83 | 6,059,122 |
| Pennsylvania..... | 1,010 | 6,240,193 | 87 | 12,765,974 |
| Virginia..... | 1,454 | 865,725 | 5 | 32,960 |
| North Carolina..... | 2,802 | 1,059,979 | | 17,431 |
| Tennessee..... | 1,426 | 1,109,107 | 6 | 1,835 |
| Kentucky..... | 889 | 1,763,685 | 50 | 214,589 |
| Ohio..... | 390 | 6,329,467 | 59 | 1,422,584 |
| Indiana..... | 323 | 1,787,108 | 20 | 188,392 |

We leave to the moral and curious inquirer to measure the intelligence and refinement of the people in these several States, to see, if practicable, whether there be any connection between the quantity of intoxicating, ardent, and hebe-

tating malt liquors, and the chivalry and social progress of the people. In another paper, this being already spun to a much greater length than we expected, directions that may be fully relied on shall be given for *curing bacon*. In the meantime let those who really wish to know what good "hams" are—not inferior, or but little, to "Westphalia," (for they are "hard to beat,")—let them go in among the snug, quiet, peaceable, orderly, industrious, neat, thrifty, systematic *Quaker* farmers and *housewives* in Montgomery county, Maryland, or among the yet remaining gallant descendants of the old, well-bred, four-in-hand, mint-julep and fox hunting tide-water families in Virginia, and he will then get to know what a *good ham really is*!—a thing never yet made in perfection out of a *swill-tub* or a *pumice-trough*.

INDIAN CORN.

EXPERIMENTS IN MANUFACTURING CORN MEAL.

JOHN S. SKINNER, Esq.

WILMINGTON, June 12th, 1846.

My Dear Sir: Messrs. Tattnal and Lea of the Brandywine mills have just informed me that they have complied with my request and sent to their agents, Messrs. Allen and Paxson, New-York, a small specimen of *white kiln-dried corn meal*, which is at your service to exhibit to the "Farmers' Club," or to experiment with as a Marylander so well knows how, and thus enable him to testify to its merits as an article suitable to the English market, under the favorable prospect of an increased corn trade with that country. The sample sent is by no means as good as may be manufactured when several hundred or thousand bushels are kiln-dried together, as they now do the yellow corn.

The enclosed letter from Mr. James Canby, whose experience reaches to half a century, will not be without its interest at your discussions on corn and corn meal at the "Institute." The long-standing celebrity of the Brandywine mills in the manufacture of flour has not been surpassed by their success, and, indeed, almost monopoly of, the kiln-dried corn meal business—for now upward of fifty years.

During the whole of this period, except to the West Indies, and principally in the shape of kiln-dried meal, but comparatively very little of this great and native grain has been exported from the United States to other countries. As a new era is, however, opening upon us, and a requisition is about to be made upon the inexhaustible supplies of Indian Corn which can be produced in our country, every fact in relation to the best kinds, and modes of manufacture adapting it for transportation, are sought after with interest.

The facts I have been enabled to collect principally through the politeness of the Brandywine millers, agreeably to your request, are cheerfully communicated. Those disposed to investigate the numerous varieties of maize grown in our country, can readily be gratified by referring to Emerson's American Encyclopædia, Lorraine's Husbandry, and the pamphlet of Peter A. Brown, Esq. of Philadelphia, on this particular subject. The only reference to varieties necessary to be made in this communication, is to the white and yellow corn of commerce; the best of which will of course be selected to suit the market and taste of the consumer.

Early in the history of our country, you are aware that both public and private attention were directed to the vast importance of this grain—that repeated attempts to rear it in countries uncongenial to its growth have failed, and shipping it abroad in bulk has been nearly abandoned, for the reasons assigned in Mr. Canby's letter; for when it cannot be safely conveyed from New-Orleans to New-York and Boston without heating and injury, it cannot be exported to Liverpool and London, as one or more cargoes recently tried on account of the English government has fully tested. Experience therefore teaches, so far as yet ascertained, that Corn intended for exportation must be *kiln-dried* if *not manufactured* in the country which produces it. This process, I am informed, was attempted in Connecticut at the close of the Revolution, and about the same time

at the Brandywine mills—the Connecticut millers using the *white corn*, and producing an inferior article of meal, owing to want of skill in preparing it and defects in the construction of the kiln. The Brandywine millers perfected their kiln and adopted the *yellow corn* by way of distinction, more for the purpose of signalizing their brand, than any supposed superiority over the white. From greater proficiency in *kiln-drying* and *manufacturing* Meal, they soon engrossed the West India markets for their yellow meal, and thus induced our farmers to grow so extensively here the *yellow corn*. This fact is not generally known, and is interesting in the history of kiln-dried corn meal.

At the several mills on the Brandywine, there are annually thus dried and ground some half-million bushels of corn. It is packed into hogsheads and barrels, and is shipped principally to the West Indies—keeping for a long period perfectly good, and does not appear to be deprived of any of its nutritive properties by having been subjected to heat. Chemical analysis will test this, and can decide the question which of the two is to be preferred—*white or yellow corn*.

Under the auspices of the New-York "Farmers' Club," an important analysis *may be made* of the relative strength and value of the best varieties of our Indian Corn. What better contribution could they make of their time, and money, and talents, hitherto so liberally given to advance the interests not only of Agriculture, but those of manufactures and the mechanic arts?

Truly your friend,

JAMES W. THOMSON.

[It appears by the Agricultural Periodical, published by the Government of the United States, under the title of the Patent Office Report, that corn meal is kiln-dried in Ohio by a process which extracts from "12 to 16 pounds of water" from a barrel of meal, and that it is effected by means of a "hot air." Mr. Ellsworth says, "There may be seen to be a loss of 12 to 16 pounds of flour; but whenever the flour so treated is made into bread, it reabsorbs, as might be expected, 12 to 16 pounds more water than common flour; making in a cargo not a small saving, in duties and freight, when sent to foreign markets." This would be true if the freight were paid on the weight. Whether there be any difference, and what, between the yellow and the white corn, *grown in the same*, or between both of them grown in *different regions*, may be worthy of inquiry; but we have supposed that the meal of the one or the other is preferred for table use, according to the fancy or fashion of particular families or neighborhoods—some habitually using the one, some the other, without any solid ground for exclusive preference.

It may be regarded as a real misfortune, that the Corn bought and shipped to England on account of the English Government, should not have been kiln-dried; hence becoming musty and calculated to aggravate the prejudices already existing against that noble grain; but the secrecy which it was probably deemed necessary to practice in the case, perhaps rendered that unavoidable. This necessity to observe the caution of having all exported corn and corn meal kiln-dried, is an important fact and cannot be too widely known. We should have been well pleased if Dr. Thomson, late President of the Agricultural Society of Newcastle, had described the fixtures and process employed in the operation. The Messrs. Gill, of Ohio, do not wish to disclose their process, "until their patent is secured," which is well enough; but we hope never to see the day when agriculturists shall make a mystery of any machine or process, which, in its operation, is calculated to be beneficial to the public. Such concealment, for selfish purposes, may suit the views of other trades and callings, but is utterly incompatible with that ingenuousness and open-handed dealing which best comports with a pursuit which courts the light under which it is carried on.

Ed. Farn. Lib.]

MANUFACTURING CORN MEAL FOR EXPORTATION.

WILMINGTON, June 5, 1846.

IN answer to your inquiries respecting corn, or corn meal, as articles of export to England, I can say, after an experience of nearly fifty years in the manufacture of corn, that I am entirely satisfied they cannot have such an article for human food as would be tolerated in this country, in any other way than by taking *meal* manufactured here, instead of *corn* to be manufactured there. From the period of saving the Indian corn crop, until June and July of the ensuing year, it will invariably heat, when permitted to lay any time in bulk, after being taken from the cob—this produces *must* on the hull and heart of the corn, so as seriously to

injure it for purposes of manufacture. It is a fact well known to every farmer in our country, that his corn, if taken from the cob within the period of time mentioned, and put into garners, will become musty, and hence it is an invariable practice with prudent agriculturists, to keep their corn on the cob until sold. How then can it be expected that corn on a voyage often extending to five or six weeks, can be otherwise than injured? A prejudice on that account has been excited in England, against this excellent and nutritious article of food, and it is no uncommon remark from an Englishman, "Our horses will not eat your Indian corn!" It is not strange that *their* horses will not eat *musty* corn—our own horses *will not touch it*, and what is more, even our hogs will not eat it, when materially injured.

The only method to get the article in England *entirely sweet*, is to give orders for *meal*, and not for *corn*; and let those orders be filled by manufacturers of established character—let the meal be branded "Extra Corn Meal for the English Market;" then if orders come *through the same channel*, they will always get an article of *uniform good quality*, ready for cooking in any of the various modes adopted, and so generally approved and admired in this country.

Dr. J. W. THOMSON.

With great respect,

JAS. CANBY.

THE COAL MINES OF PENNSYLVANIA.

THE READING RAILROAD AND BEAR-MOUNTAIN COAL FIELDS.

AMONG the various industrial resources of our country, probably not one has undergone such extraordinary development as that which has occurred in the last few years in the *coal regions of Pennsylvania*.

Beginning in 1820, with only three hundred and sixty-five tons, as the total of anthracite sent to market from that State, and going up to 1,631,669 tons in 1844, one is amazed at the vast increase, and led at first to wonder for what new and extensive demands it can have been required. The trade has nearly doubled in the last four years. It is probable, indeed, that the Philadelphia, Reading, and Pottsville railroad alone, will this year transport 1,300,000 tons—being more than all the trade in the Union besides; and even at the rate of their present business, (not less, we believe, than 4,000 tons a day,) the supply is restricted much below what would be sent—and for which there is ready and fair demand—for want of adequate means of transport. But no representation, short of an actual view of this vast trade as it is going on, can give an adequate conception of its magnitude and importance, as an element of State riches, and, we may say, of national wealth and power.

The works at Richmond, on the Delaware, a few miles above Philadelphia, are on a grand scale of correspondence with the number and richness of the fields they are intended to accommodate. It is hard to say whether these works are most to be admired for their amplitude, the substantial nature of their construction, or the labor-saving contrivances which enable the company to load and dispatch seventy vessels at a time, should as many be there ready to receive the coal on its arrival, and that without handling from the time it is dug in the mine until it reaches its destination on the wharves, where it is finally sold for consumption.

The whole establishment, the structure of the road and the cars, the amplitude of the dépôt at tide-water, and the whole arrangements and contrivances throughout, to ensure the greatest economy and dispatch, all evince a degree of ingenuity and forecast that reflects great credit on the engineer, president, and officers of the company. If the expenditures have been very large, the results promise full remuneration. The whole concern presents a case illustrative of the truth that the boldest expenditure is often the truest economy.

The coal, on coming up in cars from the mine, is dropped by a slide into the crusher, or grinder, and thence it passes through a sifter, with meshes or sieves of various sizes, like a great bolting-cloth in a flour-mill, through which it is rolled for separation into different classes, falling into as many boxes or partitions—and falls thence again into as many different cars, and is thus transported to the seaboard and shipped as before stated, at tide-water, without being handled until it is in the vessel's hold.

The great object to which this increased consumption is applied, is in the *generation of steam* for the numberless purposes for which that magical power is being every day more and more used.

Let him who thinks he knows something about the coal business of the United States only go, as we did a few weeks since, from Richmond to Pottsville, passing train after train of cars that come rolling along as if the chain were interminable, and, at the end of 100 miles in the gorges of the mountain enter the inexhaustible coal-pits, and he will begin to wake up to some adequate notion of the enterprise and power of a single establishment transporting the products of so many mines, and of the wealth which has been lying there for ages undeveloped in the bowels of the earth.

We have not time now to go into the statistics of this trade, as carried on by the prodigious energy and capacity of this company, nor to do justice to their sagacious and admirable arrangements. Of these we hope to give some account, as connected with the *agricultural interests* of the State; for it is in that light that such enterprises and operations have interest for us. In the meantime a few items in illustration of the coal trade generally, may prove interesting to some of our readers.

We have already stated that the *anthracite coal* trade had risen from a few hundred tons in 1840, to more than a million and a half in 1844. From the Schuylkill region there had come, from 1825 to 1844 by *canal*, altogether, 5,587,930 tons. By the railroad, which did not go into operation until 1842, there came that year but 49,290 tons, while in 1841, the canal brought 584,692. But in 1844, the railroad transportation had gone up to 441,491 tons, while the canal bore to market only 398,443. The canal is now idle, undergoing repairs and enlargement. In the meantime, the Reading railroad, with indomitable energy, is augmenting its means of transportation, and will this year transport, as before said, 1,300,000 tons.

The price of anthracite in New-York appears to have fallen from \$8 or \$8 50 per ton—at which it continued from 1838 to 1841—to about \$5 50, at which it seems to have settled down since the date last mentioned.

The *anthracite* coal mined in the whole United States, according to the census of 1840, was 863,489 tons, of 28 bushels to the ton. Capital invested, \$4,355,602—employing 3,043 persons. Of this quantity Pennsylvania alone produced 859,688 tons. Of *bituminous*, the quantity was 27,603,191 *bushels*, of which Pennsylvania yielded 11,620,654 bushels, while Virginia produced 10,622,345.

What immense resources does Pennsylvania possess to constitute her, if her means be well and wisely directed—a great and powerful empire in herself!—inexhaustible in her mineral, her coal, and iron, as in her agricultural wealth.—Proud of her preëminence, and strong in her capabilities, she has not a man of true State pride and sound honest heart, who ought not to blush with shame at the very thought and resent with indignation the bare *whisper of repudiation*!—**An individual** who would refuse to pay the last farthing of his own debts under

like circumstances, would be "put in Coventry" by every gentleman; and what is State honor and State pride but the united character of her sons? The man who is not alive to the character of his State, would patiently bear his own mother to be slandered!

After all, this great element of national wealth is only beginning to be brought into play. As the consumption in 1846 is to that of 1826, so will be the increase of the next, over the last twenty years. It is impossible for the imagination, spread its wings as it may, to keep pace with the *effects of steam* on the *population* and wealth of the world.—*Vires acquint cundo*. Its productive capacity in the saving of *time* and labor, and thus enabling both to be applied with so much more effect to the production of additional means of subsistence, and, of course, to the augmentation of population, may be likened to the fertility of the most prolific seed or animal, going on to increase *ad infinitum* by geometrical progression. Yes, verily, no one has yet approached the effects of the action and reaction—the reciprocal production and demand of coal and steam acting on each other, creating capital which creates demand for manual labor, and without which labor would starve.

But of all the mines yet opened, there is one, the BEAR-MOUNTAIN deposit, which seems to offer the greatest temptation to capitalists who think of embarking their funds in a sort of property which appears to have no end in means of supply and certainty of demand—essential as it is to give development and full efficiency to the great, the wonderful invention of the age—and keeping pace in consumption with the incalculable growth of population, of arts, and of manufactures.

We have neither space nor time, at present, to go into such particulars as might prove interesting to the curious inquirer as to the general industrial resources of his country, with which every American agriculturist ought to desire to be familiar, and yet avoid the minute details which only capitalists seeking investment might wish to know. We expect, however, to be able to present some striking particulars in our next, in regard to the operations and prospects of the works and mines to which we have referred. For the present we must content ourselves with lifting the curtain only so far as to submit the result of a calculation, presented in the "REPORT OF EDWARD F. JOHNSON, Esq., CIVIL ENGINEER." It may serve to set those to thinking, at least, who have made or propose to make investments in coal mines:

| | |
|---|--------|
| "Cost of mining one ton of coal at Bear-Mountain, and delivery at mouth of tunnel | 40 |
| Timber for supports, per ton..... | 06 |
| Breaking and screening, do..... | 11 |
| Transportation on railroad, and delivery into the boats on the canal..... | 20 |
| Freight and tolls per ton from Dauphin to Havre-de-Grace, by canal, 80 miles..... | \$1 03 |
| Transportation from Havre-de-Grace to Baltimore, and delivery..... | 35 |
| Add for contingencies and waste, per ton..... | 15 |
| Total to Baltimore..... | \$2 39 |
| Or to Delaware City..... | 2 55 |

Twenty-five cents per ton added to the latter amount, will probably pay for the delivery of the coal in Philadelphia, making the whole cost to the company but 30 to 50 cents per ton greater than the present price of coal at Pottsville, the source whence most of the anthracite coal which is sent to market is derived. This indicates that the Bear-Mountain coal may be brought into successful competition with the Schuylkill coal, even in the Philadelphia market."

"Midway of the North or Bear-Mountain, and a short distance from the county line of Schuylkill county, is a gap or opening, called Rausch's gap, through which flows northerly from the valley between two mountains, a branch of Pine creek. At this gap the veins of coal and ore in the North mountain are fully exposed, and have been worked, particularly the former, sufficiently to determine their character and value."

It is here that the lands of the Bear-Mountain railroad company are located—

comprising about 5,000 acres, situated nearly in equal portions on each side of the gap, and embracing both mountains.

"And it is from this point that it is proposed to construct a railway, passing southerly through a tunnel of 800 yards in length, to be formed through the South or Big Lick Mountain at its base, thence running southwesterly across Williams' valley, passing clear of the north extremity of Peters' mountain, so called, and pursuing a very direct course over very favorable ground, along the valley of Clark's creek to the canal on the east margin of the Susquehanna river at Dauphin, eight miles above Harrisburg.

"This railroad has been commenced, and about \$16,000 have been expended in excavating at the tunnel above mentioned, and in commencing another tunnel of much smaller dimensions near the Susquehanna river. The right of way for the road has been mostly obtained, and the appraised value of the portion not released unconditionally is but \$950. The ground at the lower terminus, for a dépôt and canal basin, has also been secured. The total length of the railroad, from Rausch gap to Dauphin, is nearly 30 miles, and 28 miles from the south side of Big Lick mountain, where the coal veins are first entered by it. The road as located has an inclination varying in no part more than a fraction of a foot from seventeen feet per mile, and has no curvature of a less radius than 1,910 feet. The grade line of the road at the canal is 23 feet above the surface of the water in the latter, an elevation sufficient for forming *chutes* or slides for the more convenient transfer of the coal from the cars to the boats. The ground is so favorable at this point, that basins for the mooring of boats, while loading, can easily be formed on either side of the line of the railroad, for a distance of half a mile."

Farther and fuller notice of this great and promising enterprise will be given hereafter. The more delving we can have in the bowels of the earth, the greater will be the demand for that which Agriculture produces on its surface.

In all these fields and developments for the employment of capital, there is this comfort for the farmer—that all those to whom it gives employment must *eat his bread and meat and wear his wool and cotton.*

HOUSEWIFE'S DEPARTMENT.

THE SILK-WORM'S WILL. . . . BY HANNAH F. GOULD.

On a plain rush hurdle a silk-worm lay.
When a proud young princess came that way:
The haughty child of a human king
Threw a sidelong glance at the humble thing
That took, with a silent gratitude,
From the mulberry leaf her simple food.
And shrunk, half scorn and half disgust,
Away from her sister child of dust—
Declaring she never yet could see
Why a reptile form like this should be,
And that she was not made with nerves so firm
As calmly to stand by a "crawling worm!"

With mute forbearance the silk-worm took
The taunting words and the spurning look:
Alike a stranger to self and pride,
She'd no disquiet from aught beside;
And lived of a meekness and peace possessed,
Which these debar from the human breast.
She only wished, for the harsh abuse,
To find some way to become of use
To the haughty daughter of lordly man;
And thus did she lay a noble plan

To teach her wisdom, and make it plain
That the humble worm was not made in vain—
A plan so generous, deep, and high,
That, to carry it out, she must even die!

"No more," said she, "will I drink or eat!
I'll spin and weave me a winding-sheet,
To wrap me up from the sun's clear light,
And hide my form from her wounded sight.
In secret, then, till my end draws nigh,
I'll toil for her; and, when I die,
I'll leave behind, as a farewell boon,
To the proud young princess, my whole cocoon,
To be reeled and wove to a shining lace,
And hung in a veil o'er her scornful face!
And when she can calmly draw her breath
Through the very threads that have caused my
death—

When she finds, at length, she has nerves so firm
As to wear the shroud of a crawling worm,
May she bear in mind that she walks with pride
In the winding sheet where the silk-worm died!"

WE can speak from personal knowledge of the excellence of "*rice-milk*" cooked after the following directions. So delicious a dish do we know it to be that we could wish every housewife, with whom we may ever have the honor to dine, to be made acquainted with it. But the directions must all be exactly followed:

TO COOK RICE MILK.—To three quarts of boiling milk, put a tea-cupfull of rice which has been carefully pickled and washed; cook it slowly, but constantly, for four hours before the

fire, in an uncovered vessel; season it with butter, sugar, and cinnamon or nutmeg. The milk must be new, otherwise it will curdle before the rice is cooked.

JUNE 15, 1846.

My Dear Sir: Your favor, postmarked the 8th May, directed to Upper Marlboro', did not reach me till a few days since, or you would have been sooner answered. You ask whether "there is any difference, for nice table bread, between the meal of the white and the yellow—the flint and the softer—corn? and which is preferred by the housewife and the cook?"

There is a great difference; and I never knew it to be questioned that white corn makes always nicer bread than yellow corn. Yellow corn has a strong smell and taste, and is better for stock; it is heavier, has more oil in it, and will yield more to the distiller; but for bread is inferior to the white. Negroes, who are great natural connoisseurs in the preparation of corn bread, will not, except from dire necessity, use yellow corn meal. Flint corn makes the best hominy and bread of all kinds of corn. The Calico, or Sioux Indian corn makes the whitest and softest meal, more like wheat flour than any sort of corn coming under my knowledge. It looks so like wheat flour that, without close inspection, you would be deceived as to what it was.

In reply to your other interrogatories, I have been brought to the conclusion that meal may be too closely sifted to make good bread, and that delicate flavor is lost where the corn "has been too finely ground." One bushel of corn, after one-eighth has been taken out for toll, should be ground just fine enough to make one bushel of meal, clear of the siftings; this makes it about the right fineness to be prepared into good bread.

You say truly that "*pone* is the only way that corn bread can with satisfaction be eaten cold." I send you the following recipes, derived from some of our very best old-time housewives:

JOHNNY OR JOURNEY CAKE.—Sift the meal; add a table-spoonfull of salt and one of lard to one quart of meal; then pour on boiling water slowly, stirring all the time till it becomes well mixed, and of a consistency barely thick enough for the spoon to stand upright in it.—Then spread on the johnny cake board; place it at an angle—say an acute angle—before the fire, but not too near so as to burn. The cake should be spread about a quarter of an inch thick on the board; and, when browned on one side, slip a knife between the board and the cake, and turn it, so that both sides become brown, and then serve it up.

A journey cake board should be of white oak, twenty inches long, five broad, half an inch thick, straight, and perfectly smooth. Put a brick or stone behind it when you set it down before the fire.

THE WAFER JOHNNY CAKE is made just as the above, but you make it very thin by adding more water, and it is spread on the board not more than one-eighth of an inch thick—indeed, as thin as possible—so, when it is done, it has curled up, and is brown and crisp—a mere wafer, that crushes to powder by letting it fall.

COMMON PONE is made as the thick journey cake, only a little stiffer or thicker, as dough, and put in a Dutch oven and baked slowly till it becomes brown, bottom and top.

PONE—Best—(which is intended to be eaten cold at dinner).—One quart of meal, well sifted; one table-spoonfull of salt; pour on boiling water, and stir with a spoon till well mixed into a mush, so that the spoon will not stand upright in it. Put it by the fire, or in some warm place, that it may "lighten," as the *darkies* say, or leaven; and for this purpose it requires from morn till night, or night till morn. When leavened, if too thin, stir in a little meal; add a table-spoonfull of lard; pour it in a Dutch oven, and bake it until it is brown, bottom and top. It requires a considerable baking, as it ought to be at least three inches thick and have a thick crust. It is good for days. It will have always a slight acidity about it; but, if it should be too sour when you go to bake it, you can add a little saleratus, which will correct it. People who live upon this bread, eaten always cold, with bonnyclabber, will never die of dyspepsia, but will enjoy the greatest of God's blessings—*health*. w.w.w.b.

[A recipe for *this* sort of *pone* bread is exactly what we wanted. It goes back, by association in our minds, to that early period of life, when, of all things on earth, we hate school most, and love hunting best. How could it be that in those days, with the sort of education in vogue, a boy should not have tired at the very thought of school? What was the system? what were the books? The system was one of reserve and rudeness on the part of the master, and of fear and dislike on the part of the boy! The books were, from year's end to year's end, the same—Dilworth's Spelling Book, of which the great value consisted in the *pictures*, such as the man dismounting to whip his faithful old dog, especially if the horse was a handsome one—then there was the *English Reader* or *Scott's Lessons*, and

the New Testament. The boy's mind was never refreshed by the consciousness that he was every day making fresh acquisitions of knowledge, as it should be, by instruction in natural history and in things calculated to elucidate and enliven the business and the cares of life—but the pone, such as described, we know to be excellent for *dinner bread*. We did not like it so well when *fried*, and given for breakfast before going to school. "*Wheat bread*" for school, forever. It looks more genteel, too—so at least we used to think.]

OXFORDSHIRE SHEEP:

SHEARING THEM, AND THE WEIGHT OF THE FLEECES.

BY DR. J. W. THOMSON.

JOHN S. SKINNER, Esq. Editor of Farmers' Library:

WILMINGTON, Del., May 18, 1846.

My Dear Sir—Having just returned from Maj. Reybold's annual Sheep Shearing of his home flock of some 500 Leicester Sheep, whose fleeces varied from 6 to 8 and $11\frac{1}{2}$ lbs., I cannot forego the gratification of speaking to you particularly of the clip of Mr. Clayton Reybold's two Oxfordshire bucks, selected last year by himself from Mr. Large's flock in England, and, with some six or eight fine ewes, now on Reybold's farm, where of course he is propagating this fine breed, or combing Wool stock with the view of sale, and meeting the demand in the United States of the stuff and Mouslin de Laine manufacturers. Enclosed is a specimen of the Wool of buck A, whose measurement around the body is 7 feet $4\frac{1}{2}$ inches—length from nose to rump, 5 feet—width across the back, *three* feet—aged two years—live weight, 320 lbs. His fleece was tested by a Committee, and weighed 17 lbs. strong weight. Buck B, same age, measured 7 feet in circumference under the shoulders—5 feet 2 inches from nose to rump, and 2 feet 2 inches across the back: weight of fleece, 13 lbs.

The Wool was well washed on their backs a week previous to shearing. I enclose you a sample of this wool, and only regret with the patriarchal Major and his numerous sons and other guests, that you were not present to partake of one of his "fatted lambs." I have, I hope, prevailed upon Mr. Clayton Reybold to exhibit these fleeces, with some of his other fine clips, at the American Fair at Washington. As a more detailed account of this sheep shearing will appear hereafter, I will only add that these last Sheep are fully worth a long ride from any part of our country to see: and in beholding the Major's flocks, the agricultural thrift and improvement of our little State will be fully appreciated.

I hope you got my letter, with one from Maj. Jones, on Drill-Husbandry.— Hoping to see you either at, or going or returning from Washington, I must subscribe myself, hastily,

Your sincere friend,

JAMES W. THOMSON.

TABLE OF MISCELLANEOUS DENOMINATIONS.

In copying extracts from foreign works, frequent use is made of terms and denominations with which the American reader is not familiar. Some of these terms are obsolete, but we think best to give them all. The following table will be found useful as a reference in such cases.

| | | | |
|-----------------------------|------------|--------------------------|----------------------|
| A punchon of prunes | 1,120 lbs. | A sack of coals | 224 lbs. |
| A firkin of butter | 56 lbs. | A keel | 21 tons 4 cwt. |
| A firkin of soap | 64 lbs. | A ship-load | 20 keels. |
| A barrel of potashes | 200 lbs. | A hundred of lime | 25 bushels. |
| A barrel of anchovies | 30 lbs. | A ton of potatoes | 40 do. |
| A barrel of candles | 120 lbs. | A last | 80 do. |
| A fother of lead | 19½ cwt. | A pint of butter | 1½ lbs. |
| A barrel of soap | 256 lbs. | A truss of straw | 36 lbs. |
| A barrel of raisins | 112 lbs. | A truss of old hay | 56 lbs. |
| A barrel of butter | 224 lbs. | A truss of new hay | 60 lbs. |
| A stone of glass | 5 lbs. | A load | 36 175608 |

| | | | |
|--|---------------|----------------------------------|-------------|
| A stack of wood | 108 feet. | A wey of corn or cart-load | 40 bushels. |
| A cord of wood | 128 feet. | A man's load | 5 bushels. |
| A hoghead of pilchards (3,000 fish) .. | 40 gallons. | A load of lime | 20 bushels. |
| A tun of seed oil | 236 gallons. | A firkin of beer | 9 gallons. |
| A tun of fish oil | 252 gallons. | A kilderkin | 18 do. |
| A stone of hemp | 32 lbs. | A barrel | 36 do. |
| A faggot of steel | 120 lbs. | A hoghead | 54 do. |
| A seam of glass | 120 lbs. | A butt | 108 do. |
| A load of tiles | 1,000 | A tierce of wine | 42 do. |
| A load of bricks | 500 | A puncheon | 84 do. |
| A peck of salt | 14 lbs. | A tun | 252 do. |
| A peck of flour | 14 lbs. | A pipe of Port wine | 134 do. |
| A bushel of flour | 56 lbs. | A pipe of Sherry | 130 do. |
| A sack | 280 lbs. | A pipe of Madeira | 110 do. |
| A peck loaf | 17 lbs. 6 oz. | A hoghead of Claret | 63 do. |
| A quarter loaf | 4 lbs. 6½ oz. | A hoghead of Champagne | 63 do. |
| A quintal | 160 lbs. | A load of round timber | 40 feet. |
| A tub of tea | 60 lbs. | A load of hewn timber | 50 feet. |
| A chest of tea (about) | 84 lbs. | A ton of shipping | 40 feet. |
| A bag of rice | 168 lbs. | 20 articles is a score. | |
| A wey of cheese (in Suffolk) | 256 lbs. | 5 score a hundred. | |
| A wey of cheese (in Essex) | 336 lbs. | 5 score a great hundred. | |

PRICES CURRENT.

[Corrected, June 20, for the Monthly Journal of Agriculture.]

| | | | |
|--------------------------------------|------------------------|--|----------------------|
| ASHES—Pots, 1st sort. | £ 100 lb. 3 50 @ 3 56½ | Staves, White Oak, pipe. £ M. | 50 — @ — |
| Teard, 1st sort, 45. | 4 03 @ 4 06½ | Staves, White Oak, hhd. | 40 — @ — |
| BEE-SWAX—American Yellow | — @ — | Staves, White Oak, bbl. | 30 — @ — |
| CANDLES—Mould, Tallow. £ lb. | 9 @ 11 | Staves, Red Oak, hhd. | 24 — @ 26 |
| Sperm, Eastern and City. | 26 @ 34 | Hoops. | 25 — @ 30 |
| COTTON—From. | £ lb. 6½ @ 10 | Scantling, Pine, Eastern. | — @ 16 25 |
| COTTON BAGGING—American. | 12 @ 13 | Scantling, Oak. | 30 — @ 35 |
| CORDAGE—American. | £ lb. 11 @ 12 | Timber, Oak. | £ cubic foot 25 @ 37 |
| DOMESTIC GOODS—Shirtings, £ y. | 5½ @ 11 | Timber, White Pine. | 18 @ 25 |
| Sheetings. | 7 @ 15 | Timber, Georgia Yellow Pine. | 20 @ — |
| FEATHERS—American, live. | 25 @ 29 | Shingles, 18 in. | £ bunch 1 75 @ 2 |
| FLAX—American. | 8 @ 8½ | Shingles, Cedar, 3 feet, 1st quality. | — @ 24 |
| FLOUR & MEAL—Genesee, £ bbl. | 4 12½ @ 4 25 | Shingles, Cedar, 3 feet, 2d quality. | 22 — @ 23 |
| Troy. | — @ — | Shingles, Cedar, 2 feet, 1st quality. | 19 — @ — |
| Michigan. | 4 — @ 4 06½ | Shingles, Cedar, 2 feet, 2d quality. | 16 — @ 18 |
| Ohio, flat hoop. | 4 — @ 4 06½ | Shingles, Cypress, 2 feet. | 13 — @ 14 |
| Ohio, Heywood & Venice. | 4 87½ @ 5 12½ | Shingles, Company. | — @ 29 |
| Ohio, via New-Orleans. | 3 50 @ 3 75 | MUSTARD—American. | 16 @ 31 |
| Pennsylvania. | — @ — | NAILS—Wrought, 6d to 20d. £ lb. | 10 @ 12½ |
| Brandywine. | 4 25 @ — | Cut 4d to 40d. | 4 @ 4½ |
| Georgetown. | 4 12½ @ 4 25 | PLASTER PARIS—£ ton. | 2 37½ @ 2 62½ |
| Baltimore City Mills. | 4 — @ — | PROVISIONS—Beef, Mess. £ bbl. | 6 50 @ 7 |
| Richmond City Mills. | 6 @ — | Beef, Prime. | 4 50 @ 5 |
| Richmond County. | 4 25 @ — | Pork, Mess, Ohio. | 10 37½ @ 10 50 |
| Alexandria, Petersburg, &c. | 4 — @ — | Pork, Prime, Ohio. | 7 87½ @ 8 |
| Rye Flour. | 2 50 @ 2 75 | Lard, Ohio. | £ lb. 53 @ 7 |
| Corn Meal, Jersey and Brand. | 3 @ 3 25 | Hams, Pickled. | 4 @ 4½ |
| Corn Meal, Brandywine. | 15 50 @ — | Shoulders, Pickled. | 34 @ 3½ |
| GRAIN—Wheat, White. | £ bush. 95 @ 1 | Sides, Pickled. | — @ — |
| Wheat, Red. | new 80 @ 87½ | Beef, Smoked. | £ lb. 5 @ 6 |
| Rye, Northern. | 63 @ 64 | Butter, Orange County. | 15 @ 17 |
| Corn, Jersey and North. (meas.) | 55 @ 60 | Butter, Western Dairy, new. | 10 @ 14 |
| Corn, Southern. (meas.) | 50 @ 51 | Butter, grease. | 61 @ 7 |
| Corn, Southern. (weight) | — @ — | Cheese, in casks and boxes. | 6 @ 7 |
| Oats, Northern. | 31 @ 35 | SEEDS—Clover. | £ lb. 6 @ 7½ |
| Oats, Southern. | 26 @ 28 | Timothy. | £ tierce 11 — @ 16 |
| HAY—North River in bales. £ 100 lb. | 45 @ 50 | Flax, Rough. | — @ — |
| HEMP—American, dew-rotted. ton | 80 @ 95 | SOAP—N. York, Brown. | £ lb. 4 @ 6 |
| " " water-rotted. ton | 130 @ 185 | TALLOW—American, Rendered. | 7 @ 7½ |
| HOPS—1st sort, 1845. | 18 @ 25 | TOBACCO—Virginia. | 3 @ 6 |
| IRON—American Pig, No. 1. | 34 @ 36 | North Carolina. | 3 @ 5 |
| " Common. | 25 @ — | Kentucky and Missouri. | 3 @ 7 |
| LIME—Thomaston. | £ bbl. 65 @ — | WOOL—Am. Saxony, Fleece. £ lb. | 36 @ 38 |
| LEATHER—Boards, N.R., £ M. fl. cr. | 35 @ 40 | American Full Blood Merino. | 34 @ 36 |
| Boards, Eastern Pine. | 11 @ 13 | American ½ and ¾ Merino. | 28 @ 31 |
| Boards, Albany Pine. | £ pce. 10 @ 19 | American Native and ¼ Merino. | 24 @ 26 |
| Plank, Georgia Pine. | £ M. fl. 34 50 @ 35 | Superfine, Pulled. | 27 @ 28 |

MONTHLY
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VOL. II.

AUGUST, 1846.

NO. 2.

REPEAL OF THE ENGLISH CORN-LAWS.

ITS EFFECT ON AMERICAN AGRICULTURE.

OUR readers will readily believe that we take no pleasure in cautioning them (which we consider a matter of duty) not to be too sanguine in their estimate of the benefits to be realized by American wheat-growers from the long talked of and much wished for *repeal of the English corn-laws*.

For the following, among other reasons, it may not prove for us the horn of plenty that some may have been led to imagine.

1. Wheat, there is reason to apprehend, can be produced in Europe, and sent and sold in England, cheaper than we can do it—if for no other reason, because of the lower price of labor and of freights.

2. The readiness with which the thousands of foreigners who are daily arriving can obtain our richest lands, almost for the asking. Immigrants accustomed to living on potatoes or *pumpernickel* (black rye bread)—will augment the production of wheat here in a manner to keep down the price to the lowest point of depression, and yet do better and live a thousand times better than they have ever been accustomed to do at home.

3. The act itself—the repeal—is not the out-and-out liberal and self-sacrificing measure, on the part of the British Government, which some have been taught or inclined to consider it.

In reference to the wages of labor and the sort of living in vogue among our rival wheat-growers on the Continent, what does the reader imagine these to be? In an essay on German and Dutch Husbandry, recently published under high authority in Scotland, founded on a tour of personal observation, of late date, it appears that, in the neighborhood of Dantzic, a sort of “black rye bread,” called “pumpernickel,” is the principal food used by the poorer classes; and their wages for the year, out of which they find themselves in everything except a house for shelter, is not more than would suffice to buy in this country the working and Sunday clothes of a thrifty slave on a Southern plantation.

This pumpernickel is known, too, to constitute not only the principal food used by all the poorer classes in Germany, but in Westphalia “it is to be found on the tables of the rich and poor.” In those countries the plowmen receive 12½ cents, women 7 cents, and girls 5 cents per day—not more, at the most, than one-fourth of what is paid for agricultural labor in this country.

As the question must arise, in the mind of the reader, how can these people live, in these countries where the price of meats is nearly or quite as great as here? the best way we can answer it is by setting forth their usual dietary, in which the naked truth is that meat has no place, or very rarely; for, as we learn from a modern, candid, and intelligent writer on the Industry of the Rhine, "in the morning the laborers get their pumpernickel, or black rye bread, and milk; in the forenoon, potatoes, with such 'kitchen' or meat along with them as they can obtain from *one pig*, which they *sometimes* fatten through the year; and, in the evening, either bread and milk, or simply rye meal and brose.

"Here," says this writer, expressly, "we shall only remark that, for want of other occupations, the wages of laborers are exceedingly low, averaging from ten pence to one shilling per day for men, and seven pence to eight pence for women. *If food be given*, then three pence half-penny a day is all that is added in money. On the larger farms, four pounds (\$20) is all the pay of the farm-servants—whose board is valued at five pounds (\$25). *From this and the adjacent districts, the greatest number of emigrants proceed annually to America.*"

Now, against this, we yesterday visited a farm of 130 acres, belonging to Mr. Townsend, of Long Island, managed with extraordinary judgment and economy, as proved by its luxuriant crops and profitable results. He gives to one man, who has been with him ten years, \$10 a month, or *six times as much* as such a man would get in Germany, in money, and, besides that, board far above the customary dietary of the wealthy in Germany—such living as would give a man the dyspepsia, were it not for the wholesome labor and glorious air of the country. Yet Mr. Townsend does not suppose he could make money by wheat, even at one dollar a bushel, though he reaps from 20 to 25 bushels to the acre; but has recourse to it only as a mere paying crop to nurse and protect his young grass crop.

It is against laborers in Europe, receiving such wages and so accustomed to live, or against immigrant neighbors who have been accustomed to such pay and such living in the countries from which they come, that American farmers have to contend; and hence we conclude that no increase of importation, under the repeal of the corn-laws in England, is going to open a materially higher market for the grain-farmer of the United States.

Shy it as we may, there is one palpable fact which cannot be overcome: the long peace which has prevailed, with some inconsiderable exceptions, throughout the world, has turned so many swords into plow-shares—has made so many producers in place of consumers—that agricultural production is everywhere overdone; and again, the application of steam to railroads and to the navigation of long rivers, by quickening and cheapening transportation, has brought so much new and rich land under the plow which had been otherwise too distant to be cultivated with profit, that this, too, has proved a fruitful source of over-production and low prices.

The same traveler to whom we have already referred, remarking on the Industry of the Rhine, says, "the German farmer can afford to sell his wheat and carry it to the ship for 30 shillings sterling (or \$7 50) per quarter (eight bushels;) and for freight per quarter, from Dantzic to England, 20 cents per bushel is considered a fair average price: hence," "says he, it follows that wheat, grown in the north of Germany, can be sold in an English market at 41s. 6d. the quarter, with a sufficient profit to the German cultivator." And it was very lately that it was stated in an English paper that a cargo of wheat was lying at the wharf at

Hull, from Wallachia, the cost of which in England was but 50 cents a bushel ; while in the Baltimore market it is now selling at from 85 to 90 cents.

Now, be it remembered that to get wheat or flour to tide-water, from the foot of the mountain region of wheat-growing in this country, costs more than the freight from Germany to England ; but, leaving every one to calculate for himself, according to circumstances, the cost of transportation from the farmer to the *port of shipment*, he has then to add, according to present prices, 37½ cents a barrel for freight to Liverpool. And, while the German laborer lives on his *pumpernickel* in Europe (and nearly so in this country, from force of habit), even the Virginia negro-laborer (to say nothing of his numerous non-producing *attachés*) gets 2½ to 3¼ pounds of fat bacon and meal at pleasure, with an average of as much milk, and vegetables, and fish, *besides*, as serve to make up the entire subsistence (except the *pumpernickel*) of German, English, and Irish common field-laborers.

In Westphalia, as has been seen, this low diet supplies the table “as well of the rich as the poor”—showing how rigid, there, is the habit—we had almost said the instinct—of economy !

Now, Heaven forbid that the American farmer should ever be brought to live on *pumpernickel* ! But do not these stubborn facts show how hard it must be to keep from sinking, in the effort to *make grain* in this country, with our habits—especially with slave labor, where the non-producing mouths bear a larger proportion to the producing hands than in other branches of rural, especially in planting, industry ? And, again, do not these facts go to show that the repeal of the English corn-laws is not likely to prove that universal panacea for low prices and hard times which wheat-growers may have been inclined to hope for ? What, then, says the anxious, and, it may be, impatient reader, is to be done ? And that is precisely what we, as his friend, and the enemy of the mountebanks and demagogues who are ever ready to deceive and plunder him, would like ourselves to know and be able to advise.

The question seems at once to suggest the inquiry whether there must not be some radical defect in the policy and spirit of legislation, under which the landed interest languishes for want of reward, while all other trades that live on it flourish and prosper ? If this were not the case, why is it that the young men of the country are so eager to get into offices—to get military commissions—to learn mechanical trades, and to flock to the cities for employment ? Look at the difference in the wages of labor in the towns and the country. While in the country the white laborer, through all New-England, rises at 4 in the morning, and works until dark, making fifteen hours a day, for \$10 or \$12 a month, the town mechanic—even the street-sweeper—gets his \$1 to \$2 a day, under the “*ten hour system*” !

But this is of itself a subject worthy of, and shall receive, separate discussion. There is at least no danger of being wrong in recommending the farmer to study how he can best and most safely multiply and diversify his crops and sources of income. Let him not for ever drag on listlessly in the old downward path.—There must be a commencement to all reforms—to all revolutions and changes in our courses of industry and objects of cultivation ; and he evinces the most sagacity who soonest turns his attention and adapts his labor to those new objects which changes in the relations of supply and demand indicate to be the most profitable.

Let the farmer, therefore, rouse himself to a *habit of thinking*. Let him make himself, by reading, and by an active and honorable spirit of inquiry, familiar

with the whole list of the products and demands of different States and countries—their uses and prices in our own and in foreign markets—and how he is to adapt the land, labor, and means at his command, to supply that which is most likely to pay best. Let him not continue to go round, like a horse in a bark-mill, following for ever the same rotation, and making for ever, in the same routine, the same crops, on the same ground—while a little investigation might instruct him that a change would not only improve his pocket, but improve his land; for then he would not be for ever extracting from and carrying off the same elements of fertility. Let the grower of grain, with which the market is surfeited, learn, for instance—and we only mention them as instances and at random, as they occur—let him learn how to cultivate and prepare for market, madder, and flax, and teasles—indigo—hemp—turpentine—the oil-bearing seeds and plants—the cultivation of raspberries, *blackberries*, liquorice, and even the *planting and cultivation of oysters*. Very good judges, of our acquaintance, believe that near large cities there is still great opening for the yet more *extended cultivation of fruits*; and one of our best horticulturists is of opinion that the *black-berry* might be cultivated into a state of very high improvement, productiveness, and profit, for the supply of large towns. Country people at a distance from large cities have no idea of the readiness with which the best of these berries, believed to be peculiarly wholesome, are sold; and nobody yet knows how much this fruit is susceptible of being improved by cultivation. Why may not art and culture do for that what they have done for the crab-apple, and for our native Isabella, and Catawba, and other grapes? Surely it is a much more promising and palatable subject to begin with than the crab-apple was, or even the coarse raspberry of the woods.

For *grapes* the demand is increasing every year; sales are at double the price and ten times greater amount than they were twelve years ago.

There is this comfort for the farmer who *does* turn from growing grain and meat to other things; that then he will derive personal advantage from cheapness of provisions; because the cheaper the essential elements of subsistence, as meat and bread, the more will consumers indulge in other enjoyments and luxuries.

But, in looking around for more profitable employment of his industry and his means, let the farmer take especial care, under all circumstances, to make, as far as possible, on his own farm, and in his own family, every article and partiele that he can make, without palpable waste of labor, which may fairly be considered essential to comely appearance, and indispensable to the comfort and contentment of a reasonable and philosophical mind: and, when farmers have accomplished this—lopping from the list of what custom has made them regard as indispensable many things and expenses which are really superfluous—they will be themselves surprised at the small amount to which their cash outlay may be reduced, and that, too, without any approach to a subsistence on German *pumpernickel*. Having thus satisfied themselves, by a little perseverance in habits of economy, how little ready money expenditure is really necessary to all reasonable wants, and how miserable many of us make ourselves by falsely confounding happiness with “base lucre,” the farmer will soon learn, in lieu of an eternal hankering after more money—more money—to cultivate the *love of books* and a thirst for more knowledge—a thirst which may be cheaply gratified, and which at once delights and ennobles those who cherish it. But we must now conclude with some observations upon the immediate effect of the English new corn-law bill, as regards trade between Great Britain and this country.

This corn-bill is to go into immediate effect, and to continue until the month of February, 1849 : at which time a modification of it is to take place. It is undoubtedly a bill planned for *revenue*, as in the sequel will be demonstrated. We will merely refer to the articles of *Indian corn*, *Indian meal*, *wheat*, and *flour*.

Maize, or Indian corn, is charged with a duty to the quarter, of 8 bushels, 1s. *Indian meal*, per cwt. 6d. Suppose *maize* to cost, put on board ship at New-York, 62½ cents per bushel—a common price—or equal (taking exchange into view) \$5 per quarter ; or, say £1 sterling, the duty thereon of 1s. sterling, per quarter (or 25 cents,) amounts to 5 *per cent. ad valorem* on the prime cost of the article. *Corn meal* is differently taxed, no doubt, in order to favor the English miller. The duty on corn meal is 6d. sterling per cwt. or 10½d. on the barrel of 196 lbs. weight. The barrel of corn meal may cost \$3 : the duty, 10½d. or 22 cents, is equal to 7 3-10 *per cent. ad valorem* duty. Thus much for corn and corn meal.

Of *wheat* : This article has a *sliding scale* of duty. When wheat is at 48s. sterling, and under 49s. 3d. sterling per quarter, the duty is *fixed* at 10s. This sum amounts to 1s. 3d. sterling, or 31 cents per bushel—making an *ad valorem* duty of 31 *per cent. on the cost* of wheat in New-York at 6s. per bushel.

On *flour* the duty is calculated at the rate of 38 *gallons* of wheat for 196 lbs. of flour, at the sliding scale of 48s. and under 49s. per quarter ; the duty thereon being 10s. sterling. This rate of duty on a barrel of flour of 196 lbs. is equal to 6s. 2d. sterling, nearly ; and rating the present price of flour in New-York at \$4 per barrel, the *ad valorem* duty is at the rate of 38 *per cent.* to be paid by the *consumer* in England.

The same scale of duties applies to all other grain and meal, barley, oats, &c. After the month of February, 1849, the duties are to be reduced, but not lower than those above set forth, of 1s. 6d. sterling—the present rate on corn and corn meal. Consequently, the entire bill is for *revenue*, and we must come to the conclusion that in this bill Mr. Peel has shown himself equally adroit as he was in fixing the *income tax*—as now all the people share alike—the prince and the operative.

INDUSTRIAL RESOURCES OF DELAWARE.

THE PEACH TRADE—ADVANTAGES OF TIDE-WATER FARMS ON THE CHESAPEAKE BAY.

EXTRAVAGANT stories have been circulated as to the amount of business done in peaches, of late years, in Delaware—going even so far as to set down the sale of the fruit of a single peach orchard to a company in New-York for “fifty thousand dollars,” and to state that the purchasers netted \$16,000. As well to correct such erroneous impressions, as on other accounts, the following sketch of the peach business of that enterprising and improving State, from the pen of a zealous and accomplished friend of Agriculture, will be interesting to the general reader and useful to those who may desire to embark in it on the most reliable information. The writer, Doctor THOMPSON, speaks, as we happen to know, from extensive personal observation and experience. Particular attention may be invited to his suggestion about the cultivation of *apples*, especially the pippin apple. To us it seems to merit the particular regard of those who reside on the numerous and long tide-water courses of the Chesapeake Bay.

Neither they themselves nor the public at large have, as we think, yet begun to appreciate or realize the eminent advantages of their position. They do not seem to be sensible of the vast benefit of having, not only natural and navigable canals at their doors, but canals that abound in every luxury in season, and in respect of the cultivation of all the delicate fruits, a position which enables them to pick and ship them directly to the West Indies, or elsewhere, without any liability to be bruised or injured. But how far the lands on some of these tide-water courses, especially where they are contiguous to the capes, or otherwise exposed to strong blasts of salt air, may prove congenial to the growth of the apple and other fruit trees, we are not fully advised.

On a very agreeable visit, lately, to Hon. Judge MITCHILL, (President of the Queens County Agricultural Society.) at Plandome, on the North side of Long Island, we have observed that fruit and forest trees flourish with an appearance of extraordinary health, vigor and rapid growth—especially the locust tree—such as we have rarely seen elsewhere. The locust there has been known to yield good posts, squaring 3 by 4, in seven years; and we were credibly informed that some years since, when timber was very high, the locust timber of half an acre sold for \$1,400. One locust tree in that vicinity sold to a wheelwright when cut into timber, for \$25. There are locust posts at Plandome, doing their office well, that were planted in 1791. Cherries, and apples, and pears luxuriate as if in their indigenous home; and yet, we have understood that on the south side of the island, exposed to strong winds sweeping over the ocean and carrying its spray across the country, fruit trees, especially apples, do badly. But we apprehend that for the shores of the Patuxent, one of the most beautiful rivers in the world, and all other river-side farms where the apple tree is seen, when cared for, to enjoy good health, its fruit offers one of the most tempting and certain objects that can now be presented to the attention of the landholder. But, alas! our population is so unquiet, with little capital to improve what they have, with no warehouse system for *their benefit*, with indolent and extravagant habits in too many cases, and with one eye fixed on cheap lands in the west and the other on nothing in particular, how can we expect that display of patience and steady industry which is implied in and necessary for the *plantation and care of orchards*? Ah! if a wall as high as the heavens had surrounded the Old Thirteen, instead of the lands they have given away in the west, and the roads and canals they have made to carry there their men and capital, how different would now be their agricultural condition!

But to return: those who would embark in the cultivation of fruit with a view to sale and profit, must go at it in good earnest, as a *branch of their business* worthy of all care and study. Their land must be put, for this, as it should be for *everything*, in good and *suitable* order; their trees, if not reared and budded by themselves, as they ought to be, must be well selected by *nursery men who can be relied on*; and when planted, attended to, examined, cleaned and cared for, as children are by all careful parents. Their diseases must be watched and medicated, and their enemies, external and internal, expelled and kept off. What parents, of common decency, allow their offspring to be begrimed with filth, or devoured by vermin without or within? Just such care do young trees require, if you would have them enjoy vigorous health and grow apace; and he that is not prepared to bestow such attention on his orchard, of whatever kind, had better not go to the expense of cumbering^a his ground with one, that if neglected, will only serve to reproach and degrade him as a farmer.

But we are detaining the reader from the extracts from the letter of Doctor THOMPSON, so much more worthy of his attention, and will only take room to add, that ample instructions as to rearing fruit and forest trees, from the stone and the seed, the propagation of them by budding and grafting, and the gathering and care of their fruits, will soon be given in this journal on the most reliable authorities. Time may be found for the subject of budding, perhaps, in this number, as that must be done by the middle of next month.

To Mr. Isaac Reeves, a native of New-Jersey, is the whole credit due of first introducing on a large scale the culture of the inoculated peach tree into Delaware. The late Mr. Jacob Ridgway, of Philadelphia, owning a farm near Delaware City, on the Chesapeake and Delaware Canal, was induced by Mr. Reeves to become his partner, and upon this property, in the spring of 1832, they set out the first twenty acres of inoculated peach trees ever planted in this State, with the view of supplying the Philadelphia market. They rapidly extended their plantation to about one hundred and twenty acres—were eminently successful, and one year—the *very best* season they ever had—their gross income from the sales of fruit was some sixteen thousand dollars. Peaches then commanded from one dollar twenty-five cents to three dollars per basket, containing about three pecks each. In the spring of 1836, the late Mr. Manuel Eyre and myself followed suit upon our "Union Farm," midway between Wilmington and Newcastle on the Delaware River, to about the extent of one hundred and forty acres. In a year or two afterward, Mr. Philip Reybold & Sons went into the business—then a host of others, until now, from twenty-five hundred to three thousand acres of land in Newcastle county, are planted with, and successfully cultivated in peaches—making Delaware, though the smallest of the States, the largest producer of this fruit. The result has been a proportionate diminution of price, the average, per basket, one season with another, not exceeding from thirty to sixty cents. In this way Delaware has become the principal supplier of the Baltimore, Philadelphia, New-York and North River town markets, and many of our fine peaches now reach Boston. The whole annual income from this branch of business to the farmers of this country may be estimated at from one to two hundred thousand dollars. The great improvement made in peaches within the last few years in New-Jersey and Delaware, consists in propagating none but the finest kinds, by *budding and grafting*, so as to have the fruit *as early and as late* as our latitude will admit of, the earliest ripening with us from the first week in August, such as Troth's Early, Early York, and Early Ann, and ending in the latter part of October with Ward's Late Free, the Heath, Algiers Winter, &c. I need not take up your time now with enumerating all the different varieties used and planted out to keep up this succession; some of the principal ones are (in the order of enumeration) Troth's Early, Early York, Early Ann, Yellow Rareripec, Red Rareripec, Malacatoon, Morris White, Old Mixon, Rodman, Ward's Late Free, Malden, Free Smock, Late Rareripec, Heath, Algiers Winter, &c. These trees are generally obtained for about six dollars per hundred from approved nurserymen in Delaware and New-Jersey, and the rearing then constitutes a distinct business of itself. They are produced by planting out the peach stones, or pits, in the spring, which have been slightly covered with earth in the fall, so as to be exposed to the action of the winter's frost. The sooner the pits are put in the sand or earth after the fruit is matured, the better; they should never become dry. The shoots from these stones are budded in August of the same year, from four to six inches from the ground. The ensuing spring all the first year's growth of the stock tree is cut off above where the scion has taken—not, however, until it is well developed—when, in the fall and following spring they are ready for transplanting or sale. The mode of preparing the ground for them is precisely that with us of the Indian corn crop: the earth is well plowed, and from thirty to forty bushels of lime is spread upon it to the acre. The trees of like kinds (for the convenience of picking) are then set out in rows at distances varying from twenty to thirty feet apart, according to the strength of the soil: a crop of corn is then put in and cultivated in the usual way, and this is done successively for *three years*; by this time the trees begin to bear. The cultivation of the corn being the proper tillage for the trees, and this crop amply paying for all investment in trees, &c. After the trees commence bearing, no other crop of any kind should ever be grown among them, as I have known two rows of potatoes between a row of peach trees not only affect the fruit, but seriously injure the trees; but they should be regularly plowed some three or four times in the season, just as if the corn crop was continued. So obnoxious in our country is the peach tree to the worm, or borer—the "*ageria exilis*"—that each tree in the orchard should be examined twice a year, summer and fall—say in June and October—by removing the earth down to the roots, and killing with a pruning knife, every intruder—then scraping the injured bark and removing the glue. Thus exposed, they should be left for a few days, when the earth should again be replaced with a hoe. The limbs should be only moderately pruned, or thinned out, so as to admit the sun and air, avoiding in the operation leaving *forks*, which incline them to split when burdened with fruit. When the peaches ripen, they should be carefully picked from step-ladders, seven to eight feet high, into small hand-baskets, holding one peck each. Our operators for this pur-

pose are both men and women, who earn from fifty to seventy-five cents a day besides being found. These baskets are gently emptied into the regular market baskets, which are all marked with the owner's name and strewed along the whole line of the orchard to be picked. As these are filled they are put into spring wagons, holding from thirty to sixty baskets, and taken to the wharf, or landing, where there is a house, shed or awning, for the purpose of *assorting them*, each kind by itself, which is into prime and cullings—the prime being distinguished not only by their size and selection, but also by a handful of peach leaves scattered through the top. They are then put aboard the boats in tiers, separated by boards between to keep them from injury, and so reach their destined market. We consider a water communication from the orchards, or as near as may be, most essential, as all land carriage more or less bruises or destroys the fruit. Our roads through the orchards and to the landings are all kept plowed and harrowed down smooth and even. The baskets for marketing the peaches are generally obtained in New-Jersey at from twenty-five to thirty-seven dollars and fifty cents per hundred. With trifling modifications our culture and practice may be made to suit not only the southern but the south-western States. I may here, perhaps, properly remark that the average life of our trees is from nine to twelve years, when properly cared for and protected, as I have described. That the two great and devastating enemies that the trees have to contend against are the "*peach worm*" and the "*yellow*;" the first readily yielding to the *knife* and the treatment of semi-annual examination; the latter being a *constitutional consumptive*, or *marasmodic disease*, for which no other remedy is as yet known to be practiced but *extirpation and destruction*. There are many theories and some practice recorded on this by far the most destructive enemy of the peach tree. I may hereafter give my own views on this particular and obscure disease. I concur, however, with Mr. Downing, of Newburgh, that the great and prevailing disposition of the peach tree in our climate is to over production of fruit in favorable seasons. Our remedy for this is to carefully thin it off by plucking all those that touch, or are within two or three inches of each other, when the size of hickory nuts, which are thrown into some running stream or into the hog-pens to be devoured. His mode of "*heading in*," or pruning one-half of the producing buds, is new to me, but which I have just tried upon my garden trees in the city, and will be able to speak of, *experimentally*, hereafter. With us in Delaware, as everywhere else, the peach tree *succeeds best in a good soil*. That preferred is a rich sandy loam, with clay. Many of my finest trees and choicest fruits are grown in a loose and stony soil. The trees should never be set out in wet, low or springy situations, and for the same reasons high and rolling ground should be selected for your plantations, and for the additional circumstance that they are less obnoxious to early frosts. While in the vicinity of Richmond, Norfolk, Fredericksburg, Petersburg, Winchester, and other large towns of Virginia, the peach tree may be cultivated with profit for the market, and all over the State for the purpose of drying, every farmer and owner of a lot may raise them in abundance for his own use. But I am persuaded that the best fruit crop that Virginia farmers could raise is the *apple*—the *pippin apple*, with perhaps some other of the finest fall and winter varieties; they will bear transportation—always command a good price, and be saleable in our middle States and northern markets, and find a ready sale in London and Liverpool. The very best and fairest I have seen for years was during the past winter, the growth of Clarke and Jefferson counties, Virginia.

THE CANE-BRAKE REGION OF ALABAMA.

CHARACTER OF ITS SOIL.

WE have already alluded, incidentally, to this district of country, as perhaps the most fertile, and extraordinary in various respects, and adapted to a greater number of important staples, as cotton, corn and wheat, than any other portion of our widely extended and still extending country; and yet, confident as we feel in its title to this distinction, we have to confess with deep regret that we were compelled to pass and repass without going through it last spring. But we saw and heard enough to convince us that its natural attractions have drawn to, and formed for it, a society of active and intelligent young farmers from Virginia and the Carolinas, as the rosemary trees of Narbonne are said to draw industrious bees from afar off, and to give to Narbonne honey a character for excellence equaled only by the celebrated honey of Mount Ida. Some of the soil from the banks of the Tombigbee, from a region that extends for many miles, and to the

depth of 20 feet, was put into our hands by Col. JOHN LEWIS of Virginia, was committed for examination to a distinguished Professor of South Carolina College, which is now, as is known, under the Presidency of that accomplished scholar and eloquent Senator, PRESTON. It looked more like granulated coal or gunpowder than soil.

Below we give the results, taking occasion to add that we have another specimen, from Mr. CALHOUN'S celebrated estate, in a different part of the "cane-brake" country, which we hope to get yet more exactly analyzed.

COLUMBIA COLLEGE, S. C. June 30th, 1846.

Dear Sir: I have not been able to submit the specimen of soil which was sent me, through you, by Mr. Skinner, to a minute examination. One or two experiments, however, convinced me that its extraordinary character for fertility is *not* due to calcareous matter, as was supposed; but to its thorough impregnation with minutely divided organic matter derived from the animal kingdom. That such is the case is evident from the great amount of ammonia which it is capable of yielding, and from the presence of notable quantities of the phosphates. I purpose at a future period to make such a minute examination of this soil as its importance deserves, and will inform you of the results.

I am just recovering from an attack of fever, and scarcely able to hold a pen.

Very respectfully yours,

WILLIAM H. ELLET.

To Col. WADE HAMPTON.

AGRICULTURE IN LOWER VIRGINIA.

J. S. SKINNER, Editor Farmers' Library:

WASHINGTON, June 27, 1846.

My Dear Sir: Although you paid me the compliment to write me to prepare an article for your agricultural journal, on the former and present state of Agriculture in the tide-water country of Virginia, I cannot pretend to undertake the task, with my limited extent of information in regard to it; but I will remark, as the result of my observations during the last twenty years, that there has been an evident improvement, especially along the Rappahannock, some twenty miles below Fredericksburg. Within that period the products of some of the plantations have greatly increased. Bare fields a few years since have become rich pastures; the stock of all kinds have improved in blood and character; dwellings and farm-houses have very generally become more suitable for the purposes of their construction, while some few expensive and beautiful residences have been built, and neat and appropriate churches erected—all indicating an advancement in refinement, comfort, and morals. The inhabitants of lower Virginia have become more frugal in their habits, and less addicted to pleasure and dissipation, and more devoted to agricultural pursuits; as large estates have been divided and sub-divided. Necessity, perhaps, has given a spur to industry and economy, as prices of produce have declined; and, by intercourse with their countrymen of other States, which was almost interdicted before the introduction of travel by steam power, and the extension of knowledge by agricultural works, the lowlanders of Virginia have introduced among them the results of experience elsewhere, and the advantages of a superior kind of farming utensils. In the aggregate, larger crops of grain are probably made in nearly every county in Virginia, than when a former proprietor of "Mount Airy" occasionally sent in one year thirty thousand bushels of wheat to market, which sold at about two dollars a bushel. The estate referred to has been divided into some dozen parts, and one or more parts, on an average, produces more, some double the quantity, than the same parts produced twenty years ago. This increased product, with fewer laborers, has been produced by the improved mode of Agriculture, chiefly by manures, draining, and suspension of too much grazing. Marl, lime, clover and plaster, have contributed to these results, besides the judicious application of other manures.

But why should I endeavor to instruct you, sir, as to the present mode of Agriculture in lower Virginia? It differs but little from that on the Eastern Shore of Maryland; and have you not studied "Wye" like a book? From the "Wye" and "Mount Airy" estates, large numbers of the efficient hands have been sent

to the cotton-fields of the West; yet, I understand there is no perceptible diminution in their crops. At "Wye," I heard not long since, that the extensive wheat-fields presented the same cheering prospect of an abundant harvest as in the most palmy days of the late Gov. Lloyd. At "Mount Airy" an average crop has been made, and the corn was never more promising.

Your various correspondents will have informed you of the harvests south of the Susquehanna. A friend in King George county, Virginia, writes me:

"To our surprise, we discover no rust in our wheat, and it seems to be maturing well.—The crop will, however, be curtailed by the scab, or blight. The degree of injury cannot be estimated with even tolerable accuracy, but it can be hardly less than one-fourth. As far as I am informed the disease is general. It is the same which produced such destruction in the years 1835–36. I have heard of rust prevailing to a considerable extent in some parts of the county. It is hard to comprehend why it is not universal, after the recent bad weather.—Perhaps the cool weather was not favorable to its extension."

In my own wheat upon my Nanjemoy plantation, I had but little rust or scab, and that among the most indifferent spots, in basins, and the last sowing on the inferior land. Having had about 500 acres in wheat, it will exceed my average product per acre on the same land. I find the advantage of early sowing: this I was enabled to do by the fly and rust-proof wheat I have raised now for three years. It came originally, as I learn, from Chili, and was obtained by our friend Hon. John Taliaferro from Hon. Dr. Naudain, Ex. U. S. Senator from Delaware. We call it the Taliaferro wheat. Miue was sown from the 17th to the last of September: it has fully sustained its reputation under my observation.

There has been a general failure in the wheat as far as I can understand along the Piedmont country, through the fertile lands of Loudoun and Fauquier, as far as the James River, owing chiefly to the scab. Farther south the wheat has sprouted: and to an extraordinary degree on the plantation of Hon. George McDuffie, in South Carolina.

My overseer on my canebrake plantation in Alabama writes me:

"The cotton crop is two or three weeks later than last year. We have but few blooms yet: last year there was plenty. We have had a great deal of rain and freshets that were upon and over a great deal of cotton, which injured it very much. We have had a hail-storm that cut the cotton. The prospect looks dull for a good cotton crop, unless we have a late fall. The cotton looks bad all through this neighborhood, and I am told it is the case throughout."

Such is the report from the most productive cotton region in our country. Our trans-Atlantic friends are unwilling to credit such reports, until they learn their reality by the failure of the general crop, when their incredulity is punished by having to give an advanced price for our staple. No part of our country is more flourishing at this moment than the cotton region referred to; and the hope is indulged that the time is not far distant, when a railroad now in progress, east of the Alabama river, will penetrate it, on its way to the Mississippi, and perhaps at no very remote period, to the Pacific, somewhere bordering if not through California—the object, as I believe, of

Yours, faithfully,

BENJ. OGLE TAYLOR.

[How little is it given us to foresee many of the heaviest calamities that await us! In one short week after the preceding reached us, from a pen to which we have been so often and so much indebted, it was the writer's irreparable misfortune to lose the partner of his bosom and of his paternal cares—a lady endowed with all the most attractive and endearing qualities of her sex. Surely never were the halls of social refinement and domestic happiness more suddenly and sadly turned into a house of mourning!

Ed. Farm. Lib.]

IMPORTED SAXON SHEEP.—Four Saxon bucks and four ewes have just arrived at this port, in the ship *Atlantic* from Bremen. These superb animals were selected from the celebrated Electoral flocks in Saxony, by JOHN A. TAISTER, Esq. of Hartford, Conn. one of the best judges of sheep and wool in this country. He was assisted in his choice by Baron DE SPRECK, director of the flock. These are by far the largest and best formed Saxon sheep we ever saw. Their fleeces are remarkably fine and even, and will shear very heavy. They were purchased for MR. SAMUEL C. SCOVILLE, of Salisbury, Conn. for the improvement of his present large flock of native Saxons. We consider this importation a very important one to the country. [N. Y. Journal of Commerce.

DESCRIPTION OF THE CHEROKEE COUNTRY, GEORGIA.*

My Dear Sir: Enclosed I send you Col. SHACKELFORD'S letter. His residence being in the mountain country of Georgia, enables him to answer yours, I trust, entirely satisfactory to you
Most respectfully, your obt^d servant. J. S. THOMAS.

J. S. SKINNER, Esq. Editor of the Farmers' Library :

CASSVILLE, April 23, 1846.

Dear Sir: Our mutual friend, Col. JOHN S. THOMAS, of Milledgeville, informs me that he has referred you to me for an answer to the inquiries contained in your note addressed to him on the 3d ultimo.

I am happy to gratify, as far as in my power, his and your wishes, and to contribute anything that may be of advantage to your friends in Maryland and Virginia, as well as to the people of North-Western Georgia; for I assure you we shall esteem the immigration to this part of the State of such characters as you have referred to, a most desirable acquisition to our society, independent of the other general benefits likely to result to us from their more improved systems of Agriculture and husbandry.

In order that you may better understand the facts I am about to communicate, I send accompanying this letter a rough map of the country referred to in yours. The map was never very perfect, and the additions I have made do not pretend to accuracy, but it will assist to give you a general idea of the character and topography of the country.

The Cherokee territory of Georgia was first divided into four unequal sections, as is shown in the colored perpendicular lines running north and south. Each section was subdivided into districts, nine miles square, except those that were necessarily fractional. The districts were again surveyed into lots, some of one hundred and sixty acres and some of forty acres each. The counties into which the whole territory has been divided I have attempted to mark for you on the map. I have also rudely sketched a much more important feature in the irregular marks running along the line of the Coahutta and Pine Log mountains, from the twenty-seventh district of the second section nearly south to the fourth district of the third section, and thence south-westwardly to the Alabama line in the seventeenth district of the fourth section. This I have marked as the dividing line that separates the granite and older crystalline rocks from the secondary and carboniferous series. I have been thus particular because the marks and memoranda made upon the map are not very legible.

East of the line last referred to, the country is mountainous, and affords an abundant supply of summer pasturage or range. The river bottoms are generally narrow, seldom exceeding half a mile in width, but usually very rich. The coves on the smaller streams are of a similar character. The hill-sides and mountain-slopes of Lumpkin, Union, Cherokee and Gilmer counties are frequently of rich soil, and eminently productive of wild grasses. The counties of Forsyth and Cobb present, in compensation for the absence of richer hill-sides, more extensive level tracts of land, but with some exceptions inferior in the character of the soil. In all this general region, lying east and south of the line referred to, and including part of the counties of Paulding, Cass and Murray, and the whole of the counties of Cobb, Forsyth, Lumpkin, Union and Gilmer, gold mines are found—some of them, especially late discoveries in Gilmer and Union, of the richest description. In many places there are indications of other valuable metals not yet certainly ascertained. This division of the country is well adapted, so far as summer wild pastures are considered, to the raising of sheep, cattle and mules—the higher latitudes and mountain ranges affording the most luxuriant grasses, and being at the same time less subject to failure from drouth than

* Being one of the fruits of inquiries into the undeveloped, or not generally known, industrial resources and natural advantages of the South and South-West—made by the Editor of the Farmers' Library, on a tour in the early spring of 1846.

the southern portion. In relation to beasts of prey, I may say once for the entire country, that in the unsettled mountainous regions there are yet to be found numbers of wolves, but few wild-cats, and some bears toward the northern boundary of the State.

The capacity of this division for producing an abundance of Indian corn is, as you perceive from its character, somewhat limited.

Iron ores are found in several localities. The most plentiful supply of this useful mineral is found along the line marking the main geological features of the territory. Iron works are already established near the Tennessee line on Alaculsa Creek, and at the two points in Cass county marked on this Etowah (Hightown) River and Stamp Creek (called on the map Lick Creek). The two latter produce a plentiful supply of manufactured iron and castings. Their position is within a few (say six and three) miles respectively of the Western and Atlantic Railroad, upon which large quantities of iron are now being transported. Fine white crystalline marble is found in the county of Cherokee in great quantities, at the place marked "Daniels" on the map. It is successfully wrought.

The water-power is excellent and plentiful. A cotton factory has been for several years established at Roswell, in Cobb county. A number of gentlemen, forming a strong company, propose erecting another on Sweet Water Creek, in the same county. This part of the country is lavishly supplied with springs and rivulets of excellent free-stone water, and is most exempt from stagnant water and the causes of malaria—nevertheless, portions of it have been afflicted with diseases incident to the reclaiming of a forest region. It offers but few situations for good settlements of land sufficiently extensive to accommodate large neighborhoods.

Parallel to the line we have been considering, and immediately along the western bases of the mountains referred to, the character of the country is suddenly changed, and the entire region lying west and north-west becomes highly calcareous. There is no portion of it, except the plains of the Sandstone Mountains, that does not contain abundant supplies of limestone for agricultural and other purposes.

From the Coahutta and Pine Log Mountains, that sometimes rise two thousand feet above the plains below, to the Look-out Mountain, making nearly the same height, and across the valley of Look-out Creek to Raccoon Mountain, is one continued series of valleys and mountains or mountainous ridges, all bearing a uniform general course from N. N. E. to S. S. W. These valleys are intersected by the valley of the Hightown on the south, by the valley of the Coosawatee near the center of the eastern portion, and the valley of the Coosa through the western portion, and bordered on the north-west with the valley of the Tennessee. The valleys of the Conasauga and Oostanalau, no way inferior, take their courses along the general line of mountain and valley, and which is very distinctly shown by the course of the Look-out Mountain and Chattooga River.

If you strike a line corresponding with this general range and passing through Rome at the head of Coosa River, on the east of it, in this division, the valleys are frequently undulating, while in many places they contain most extensive tracts of level country. Maintaining the same general course, they are more diversified on account of irregular highlands that divide the waters of the Hightown, Coosawatee and Oostanalau Rivers. Each valley usually takes the name of some tributary of the large rivers.

The hills and mountain ridges of this region are most usually covered with fragments of white quartz, which scarcely extend below the surface, exposing a fine, close soil beneath, upon which grasses and clover have succeeded well. In some cases a calcareous shale, reddish or blue, and subject to constant disintegration, forms the immediate subsoil. These hills, I have thought, promise the happiest results from the culture of the vine. Nature herself seems to invite us to this highly beneficial branch of Agriculture, by her lavish production of the wild vine upon these lands.

The part of the country now under particular consideration holds preëminence for the production of wheat, and this may be said without disparagement to any of the other rich and productive valleys of the limestone region. It is delightfully watered with the finest limestone springs and streams, and contains frequent beds of iron ore, with water power sufficient for the reasonable economical purposes of life.

West of the imaginary line we have drawn, through Rome, the character of the country changes rapidly. The valleys, while they are generally rich and productive in the highest degree, sometimes fall short of the uniform fertility of those of the eastern part of this division. The sandstones of the carboniferous period begin to be developed in precipitous cliffs along the regular and almost unbroken lines of the mountains, until, reaching the Look-out and Raccoon Mountains at the north-west, we have inexhaustible supplies of bituminous coal, with extensive beds of iron ore. The iron ore, however, need not be confined to these mountains, as it is plentiful in all the intermediate limestone region east of them. All these valleys are highly fertile, beautiful, and inviting. That of the Look-out Creek embraced in the county of Dade, between the two mountains last mentioned, is a spot of surpassing beauty and loveliness. Standing a thousand feet above the valley, on the cliffs of the mountain—whose broad surface, covered with forests of the finest timber, and carpeted with the most luxuriant grasses and delicate flowers, is no inconsiderable object in the picture—and looking from its battlements on the quiet valley—which seems to repose in unobtrusive consciousness of its own worth, inviting man to seclusion and happiness, while its more than generous soil offers the richest return for his labors—few men would decline the mute but expressive invitation, or fail to be enraptured with the scene. But I must not discriminate, or justice would lead me back over the whole country, where each little or greater valley or mountain boasts its own peculiar beauty or excellence, until I should find myself viewing the more extensive and scarce less interesting prospects from the wilder and bolder crags of the Coahutta.

The Look-out and Raccoon Mountains are of very considerable extent, embracing large tracts of level land usually elevated at one or both edges above the central plains. Look-out is from five to twelve miles wide. High up toward its northern point, Little River takes its rise, and leaps its cascade course along the whole length of the mountain to the valley of the Coosa, of which it is a tributary. Its channel in the southern portion of its course frequently exposes fine beds of coal. These two mountains afford the very best localities we have for the rearing of neat cattle, horses, and mules. Cattle subsist all winter without artificial provision. High expectations were once entertained of the success of sheep husbandry upon the Look-out Mountain; but the only two attempts upon a considerable scale, and which have come particularly under my knowledge, have failed. The sheep have grown poor, dwindled and died, until in each instance the project was abandoned. The smaller streams upon the mountains have low and marshy borders, and this statement applies also to the ponds, which are frequent upon it. Whether this may not be one cause that the situation is unhealthy for sheep, your judgment will be better than my conjecture. The soil of these mountains is frequently productive, and would in many instances be considered respectable land, if it lay elsewhere than beside our rich valleys. The water power of the western portion of the limestone region perhaps equals that of the eastern, but it is not so equally distributed. Upon Chattooga River, in the county of Chattooga, a manufactory is just going into operation. By next July, six or seven hundred spindles will be in motion. The character and energy of the company insure the success of this enterprise.

Lead (Galena) has been found in several places in the limestone division, but no sufficient exploration has been made to determine whether it is in sufficient quantity to justify mining. Mineral springs, chiefly chalybeate, are of frequent occurrence—some of them strongly acidulous to the taste. At Trenton, in Dade county, is an excellent white sulphur spring, containing a small proportion of muriate of soda in its water.

Amid all this dry matter-of-fact, I may venture the opinion that the valleys of Coosawatee and Oostanala Rivers embrace a salt region of great extent and value. Gypsum has not been discovered, but little doubt is entertained of its existence.

Within the whole region east of the Look-out Mountain, sheep have succeeded well, but best farther east in the limestone region. Cotton grows well in the southern portion, while clover and grasses may be considered as reasonably certain crops in the northern parts. But little attention has been given by our farmers to this subject. The whole limestone region is so productive of Indian corn, wheat, and other small grain, that I have heretofore denominated it the "granary of Georgia."

In most of the valleys, large settlements of neighborhoods may still be made in favorable locations, with the advantage of water power for all ordinary purposes. The best situations for the rearing of sheep are along the border of the limestone region, and continuing south-west along the whole course of the Hightown River. The valley of this river is bounded along a great distance on the south by extensive forests of long-leaved pine, affording good grass, but little water, and a dry soil. Many interior localities present also peculiar advantages for sheep and other husbandry. We have great confidence in orchards in this country, but are not practically acquainted with its capacities in that respect to speak with certainty. Potatoes succeed admirably. Our best bottoms, without manure or extraordinary cultivation, will yield fifty bushels of corn per acre; the best valley lands give about forty. I have not put this down at the maximum which a few acres under certain circumstances may have authorized. But Agriculture here is far from being in an advanced state, nor is the capacity of our soils under proper treatment yet ascertained. In the county of Cass, which has been (and justly, I think) distinguished as the best county in Georgia, the first-rate lands—a fair proportion improved and in cultivation—are worth from fifteen to twenty dollars per acre for large settlements, which usually embrace some broken land. The price graduates from this sum down to five dollars per acre for the thinner valley lands, which are still very productive and susceptible of a high state of cultivation, the subsoil being usually composed of the very best elements. Wood land of equal quality would range but little above half those prices for quality, but is more expensive and difficult to procure, as the single lots are scattered in the hands of individuals in different parts of the State, and frequently of other States. Land bears a higher price in Cass than in any other county, yet not always higher in proportion to quality. The price in every part of the country is frequently regulated by accidental or temporary circumstances.

White hands for Agriculture can be had at from six to ten dollars per month, clothing themselves. Negroes are worth from forty to seventy dollars per year.

Our richer valleys have more often been afflicted with disease than we could wish. Usually we have not been able to trace it to any cause that was permanent in its character. The clearing of lands—small water-courses, although limpid and pure of themselves, choked up with decaying timber, and mill-ponds in a more criminal state of neglect—the very low stage of the rivers one season, and the decay of the luxuriant water-mosses—have in general accounted sufficiently for our afflictions. But as to these causes, none of them are or should be permanent. Our streams, up to the size of considerable rivers, are almost as pure as crystal, and greatly exempt from stagnant waters, while they hold their courses over beds pebbled with quartz, jasper, chalcedony, and agate, and not unfrequently of the more solid limestone. Beyond all this, among the mountain coves and more confined valleys, there seems to be some general tendency to inflammatory disorders, not always to be referred to any of these causes. But the active and hardy character of our population, and their capability to bear long-continued fatigue, show that we are exempt from those terrible inroads which disease makes upon the human system in the valleys of the West.

Our actual and prospective advantages of markets are found in the parallel routes of the Savannah River and the Charleston and Hamburg Railroad, 136 miles, to Augusta; the Georgia Railroad, 170 miles, to the eastern terminus of the Western and Atlantic Railroad at Atlanta; in the Central Railroad, 190 miles, from Savannah to Macon; the Macon and Western Railroad (formerly the Monroe Railroad), 101 miles, from Macon to Atlanta; and in the Western and Atlantic Railroad (a State work), now in operation 80 miles, to Dawsonville, with an appropriation to extend it 22 miles farther to Cross Plains, which will be done during the present year. The double lines on the map mark the route of the Western and Atlantic Railroad, now in operation; the continuous single line indicates where it has been graded, except an unfinished tunnel. If this cannot be successfully penetrated, a circuit of three or four miles will take the road on a grade around that obstacle. The road will ultimately be completed to Chattanooga, in the State of Tennessee, as marked on the map. From Kingston, in Cass county, to Rome, 17 miles, a charter is granted for a railroad. One hundred and fifty thousand dollars of stock are required to be taken before the company commences operations. On the Coosa River, from Rome to the mouth of Wills Creek in Alabama, a steamboat is now running, laden with the produce of a rich

cotton country and the merchandise of the East. In high water, flat-bottomed boats go down this river to Mobile. From the mouth of Wills Creek to Gunter's Landing in Tennessee, 35 miles are reported practicable for a railroad, and the people of Alabama propose to construct one on that line. The Hiwassee Railroad, from the interior of East Tennessee, is almost wholly graded to its junction with the Western and Atlantic Railroad at Red Hill, 10 miles above Cross Plains. From Chattanooga to Nashville, the people of Tennessee propose to construct a railroad, the route having been reported practicable by Prof. Troost.

You will perceive that the Western and Atlantic Railroad passes through the heart of the richest country in Georgia. Running through the county of Cobb, it enters the limestone region where it crosses the Hightown River, and continues its course through the counties of Cass, Murray, and Walker, to Chattanooga, contiguous to the counties of Cherokee and Gilmer on the east, and the more fertile counties of Paulding, Floyd, Chattooga, and Dade, on the west. The gold mines alone furnish a market for their own particular districts.—This sums up the advantages of markets and modes of conveyance.

Your inquiries covered an area of country embracing four millions, three hundred and sixty-six thousand, five hundred and fifty-four acres of land—more distinguished for the variety and value of its mineral and agricultural resources and capacities than any other country of the same extent probably in the world. My reply is necessarily succinct—sometimes it may have been too general—but, to have enumerated our valleys alone by name, and to have mentioned the leading distinctive character and quality of each, would have filled a letter of many pages. The resources of this country—its advantages of commercial intercourse—its climate—its beauty—its healthfulness—the security its interior position guaranties alike against the inroads of invasion, the horrors of insurrection, and the no less terrible calamities of cholera and plague—and its fitness to make the home of industry and virtue the temple of domestic happiness—I dare venture the opinion, make it among the most desirable countries on the globe. Certainly I have seen none that equal it in the happy combination of its advantages.

Very respectfully, your ob't servant,

A. D. SHACKELFORD.

We took the liberty of submitting the above letter to Dr. J. S. WHITTEN, of Hancock county, Georgia, who was himself making a tour of agricultural observation in the North, and, in passing, favored us with a visit.

The letter from Newcastle county, Delaware, which comes next after the Doctor's, goes to show, in a satisfactory manner, how active is the spirit of agricultural inquiry, and how earnestly public attention is getting awakened to the opening which *sheep husbandry* offers to agricultural industry, and to the advantages which the whole range of the Alleghanies offers for the grazing business generally, and for that division of it in particular.

The map referred to in Col. Shackelford's letter will be sent to any one who may desire to see it.

American Hotel, New-York, June 15, 1846.

Dear Sir: I perused with some care the communication of Col. SHACKELFORD on the subject of the new Cherokee section of Georgia; and, at your suggestion, make the following comments:

I only traveled through that region once, two years since; and my attention was principally directed to the Agriculture and agricultural resources of the country, and really I think he is moderate in his estimate of them. What he styles the carboniferous formation appeared to be a peculiar formation for the South—an alpine secondary formation; below, a marble and crystalized limestone; above, and frequently mingling with the soil, a now uncrystalized carbonate of lime, variously combined with clay, sand, and ferruginous deposits, and very happily combined for agricultural purposes; and the alluvium he speaks of on the water-courses is equal in fertility to any soil I have ever seen. It is at the southern termination of the great Blue Ridge, where the mountains are not so high above the plains as to create great and sudden changes of temperature—about the practical line separating the production of cotton from that of grain and the grasses; and the climate, temperature and location give it a peculiar adaption to the growth of stock and the economical division and distribution of labor, as the market or predilections of the producer might suggest. I think wheat, clover, and

all the calcareous grasses adapted to a temperate climate, can be produced there profitably. It is just south of the thirty-fifth degree of north latitude, and sufficiently elevated to secure a dry, salubrious atmosphere. I think the malaria and disease that he speaks of are easily accounted for, and will readily yield to judicious Agriculture and improvement. There are some marshy flats that can be ditched, though comparatively poor; but the whole country was and is now loaded and overshadowed with a most luxuriant vegetation: and to the natural decay of this is added the killing and decay of heavy forests in every direction. The decay of all this, hastened by the calcareous solvent spread everywhere on the surface, I think is sufficient to account for the sickness, and, if true, points out the remedy as sure and easy, and as being the necessary result of an improved husbandry.

I am not so well prepared to judge of his topography and statistics, though I have no doubt of their general accuracy. All that I do know would confirm his. But I would say to all inquiring minds—*go and see.*

I am, very respectfully,

J. S. WHITTEN,
of Hancock, Ga.

To J. S. SKINNER, Esq.

SHEEP HUSBANDRY.

REGIONS OF THE UNITED STATES AFFORDING THE GREATEST ADVANTAGES FOR UNDERTAKING IT ON A LARGE SCALE.

Near NEWCASTLE, Del. June 24. 1846.

Dear Sir: I take the liberty of addressing you a private note on a subject of much importance, at least to myself, and, as I should suppose, to many others—so that you can, if you think best, answer it publicly.

The subject to which I allude is the growing of wool on an extensive scale, and as a distinct branch of Agriculture, in the mountainous lands of Virginia, Tennessee and the Carolinas.

I address you on this subject under the impression that you possess more information in regard to it than any other man in the country. I have already seen several articles on this subject in the FARMERS' LIBRARY, which furnish much valuable information, but there are still several points which I should like to see examined and discussed.

I should in particular like to know the section or region of country within the limits above spoken of, that in your opinion is best adapted to the purpose. Where the field of choice is so wide, a person unassisted by the observation and opinions of others, might easily correct a fatal error in the selection of the precise locality for carrying on his operations—inasmuch as a new enterprise, always attended with more or less difficulties, requires a combination of all the most favorable circumstances to insure its success.

The following, I should suppose, are some of the principal circumstances which should direct the choice:

The price and fertility of the land; the abundance of the natural, and its adaptation to the artificial grasses; its salubrity with reference to the constitution of sheep—particularly freedom from wet and sponginess: the climate—particularly the length of time which the animals would require to be foddered in winter; together with the facilities for reaching a market.

In regard to the length of the foddering season, the elevation, I suppose, would have more influence than the latitude. Can you inform me what number of feet in altitude above the sea is supposed to be equal to a degree of latitude, with regard to the influence on climate?

Is it probable that sheep could be kept in *winter pastures*?—that is, in pastures that have been unstocked during summer, and the grass allowed to fall and lie upon the ground. During a ramble in Western Virginia, last summer, I heard of this plan having been successfully adopted, though not on a large scale. The sheep, it was said, would readily remove the light snows, when there were any, sufficiently to obtain their food. In connection with this plan, is it not probable that the turnip could be used to advantage? It grows, I am told, to astonishing perfection on these Virginia lands, even without the plow having been used. It is sufficient to deaden the timber, and in a dry time burn the trash, and then harrow in the seed upon the mellow surface.

The region which I visited last summer was on the route from the mouth of the Great Kanawha to the White Sulphur Springs, and thence to Lynchburg.

The lands which particularly struck my eye were situated in Kanawha, Fayette, and Greenbrier counties—the two former not coming under the designation of mountainous lands, but *sufficiently hilly for any purpose*! The price of wild lands in these counties is from 25 to 50 cents per acre by the survey, say of 5 to 10,000 acres. In a survey of this size, of course some worthless land would be found. I could name a single person who holds 190,000 acres of these wild land.

The two former counties being situated much lower, would be likely to have an advantage on the score of climate, but are not, I think, so favorable to the production of grass as Greenbrier county. I have heard the Blue Ridge highly spoken of for grazing purposes, but know nothing personally concerning it: I however wish I did, and soon intend to. In the counties above mentioned, what sheep there are live in winter almost entirely on what they can pick in the woods, though it would be unreasonable to suppose that they thrive under such treatment.

Is it not possible that the migratory system of Spain might be adopted?

Through the region spoken of, a railroad is certain sooner or later to be constructed. A charter was granted at the last session of the Legislature of Virginia for this purpose; and it is precisely on the route of the James River and Kanawha improvement, undertaken by the State a few years since, and finished to Lynchburg. All things considered, can a more favorable region than I have alluded to, be pointed out?

What breed of sheep would be best suited to the circumstances? The hardy and industrious merino, or a cross of that breed with some other, it is possible I suppose, might claim the preference. Where could they be obtained best, and on what terms?—And, lastly, your opinion is requested, whether such an enterprise could be profitably conducted at the present prices of wool; and whether this region would have any advantages over the prairies of the west for the purposes of sheep husbandry.

According to my plan, the sheep would be managed by shepherds employed expressly for the purpose, who if they did not accompany them in their wanderings by day, would fold them at night. The lands would require to be fenced, probably, which can be done, I find, for 5 cents per pannel, as strange as it may appear.

You will oblige me exceedingly by answering these queries, either through the FARMERS' LIBRARY or otherwise, so that I may have the benefit of your views on a tour of observation which I shall commence on the 15th of July.

We invite to the above the candid consideration and reply of gentlemen who can speak from personal observation. For ourselves, we do not feel prepared to make any but a few general remarks. In reference to such *mountain* land as we have seen, a large proportion of it has appeared to be so covered with wood and stone as to be comparatively worthless. The valleys, on the other hand, appear to be very rich; but they are narrow, and when so expanded as to admit of laying out good farms, the price is very high, considering their distance from market. Again, we apprehend that *wolves* have not been so thoroughly extirpated as to prevent their ravages from constituting a serious difficulty in the way of *sheep* husbandry. Then, again, if wool be the object, does it not, in the mountains, become so matted up with *burrs* as to create a very serious obstacle to the success of the wool grower? Is it possible that fencing can be procured to be done for less than *a cent a rail*, for each pannel? and would less than ten rails answer to keep out as well as to keep in? and would the land inclosed be worth the cost of the inclosure? As to sheep feeding through the winter on the grass of the country, we are inclined to think they might, in the region to which the writer refers. We once heard Doctor Brockenboro' say that he knew a fine lot of some two dozen wethers escape, in summer, at the warm springs in that region. Lost altogether for some time, they became perfectly wild, lived out through the whole winter, and next spring and summer were *shot* as they were wanted—and finer mutton he never saw. Every one knows that the country is peculiarly congenial to the constitution and growth of the sheep, and that no where in the world is better mutton to be found than at CALDWELL's table at the White Sulphur; his butcher unbuttons the collars of 3,000 a year. One of his

chops, broiled and served up in its own juices, with a little salt and pepper sprinkled on while cooking, is not bad to take for breakfast. We envy the many who will this summer have the happiness to prove *that pudding in the best way—by eating it!*

There are some strong reasons to believe that for our mountain ranges the Cheviot sheep of Scotland would be most profitable; we hope some one will import them; we are not sure that it has not been done by Mr. Murdock, near Asheville, N. C.—no one better qualified than he to answer many of the points in this letter; *will he?*

Farther as to climate; besides the fact that the general effect of elevation on temperature would be sufficiently evinced by the uniformly snow-capped summits of all elevated regions, experiments have determined with considerable certainty the laws which govern the case, and according to which the decrease of temperature keeps pace with increase of altitude.

The theory is that these decrements of heat, as we ascend, should correspond with, if not depend upon, the greater or less density of the atmosphere; but this correspondence is liable to be disturbed by various local causes.

Professor Leslie (*Ency. Brit.* art. "Climate,") estimates that the diminution of temperature of 1° of Fahrenheit's scale, corresponds to an ascent of 300 feet; but this, it is said by the best climatologists, will only hold true of moderate elevations. At the altitude of 1 mile, 2 miles, 3 miles, 4 miles and 5 miles, the increase of elevation corresponding to 1° Fahrenheit will be respectively 295, 277, 252, 223 and 193 feet. The allowance, however, of 1° of Fahr. for every 300 feet of ascent, is a rule of easy recollection, and in ordinary cases may be taken as a sufficient approximation. The Alleghany or Apalachian table land which extends from the great lakes into Alabama, lying about equidistant from the Atlantic and the Mississippi, has, according to Forry, (in his able work on the Climate of the United States,) a mean height of about 1,000 feet; but in some places it is much more elevated. This Apalachian or Atlantic system, says Forry,

"consists of four independent mountain groups, crossing the country in the same general direction, from N. E. to S. W. each obviously separable from the others by strongly marked external features, no less than by their geology. This system is less a chain of mountains than a long plateau, crested with chains of hills, separate from each other by wide and elevated valleys. The mean altitude is perhaps 2,500 feet" above the ocean, "of which not more than one-half consists of the height of the mountain ridges above their bases, the adjacent country having an equal elevation above the sea. These parallel mountain-chains rise on the vast tract of table-land which occupies the western part of the Atlantic States and the eastern portion of the adjoining States of the Mississippi valley, about midway between the Mississippi and the Atlantic. The group in New-England, which passes through New-Jersey into Pennsylvania, consists almost wholly of primary rocks, chiefly of the stratified class. Mount Washington, the most elevated summit, attains an altitude of 6,428 feet. In the Blue Ridge group, pursuing the south-west course from Maryland to Alabama, no rock of genuine primary character has yet been found, but formations principally of the oldest non-fossiliferous secondary group, or such as formerly would have been named *transition*. In this range, Black Mountain in North Carolina, which has an elevation of 6,476 feet, is the highest summit. The next group, lying west of the Blue Ridge and continuing parallel with it to Alabama, has a formation which, belonging to the oldest fossiliferous groups, contains no rocks as recent apparently as bituminous coal series. The third group, which lies to the west and north-west of that last described, presents little uniformity in its course; but when it has the character of ridges, the general direction is parallel. In this triple division south of the Hudson, the eastern may be considered as destitute of *any coal formation*—the middle as embracing the strata of the *anthracite*—and the western as containing the vast *bituminous* coal formation."

In his candid and well written account of the mineral springs of Virginia, on the margin of the region to which our correspondent refers, Mr. Burke, the polite proprietor of the Red Sulphur Springs, says he has never at that place seen the thermometer lower than 6° below zero, and that he has been used to consider 6° above as very cold weather. The usual summer temperature is, he says, from 57 to 73, the nights and mornings being almost always agreeably cool.

The climate of a country, says Braude, is influenced not only by its horizontal configuration, but also by its *relief*, or vertical configuration.

The question as to the altitude that may be equal to a degree of latitude for the purpose entertained by our correspondent, is not so easily answered. It is known that in some countries the line of vegetation and of congelation is much more elevated than in other. The subject of *climate* is worthy of itself to form the basis of an article as connected with Agriculture.

ON THE CULTIVATION AND MANAGEMENT OF FLAX.

AMONG other objects to which we apprehend the agriculturists of the United States might have recourse, to diversify their staples, and so, by diminishing the production, augment the profits of each, *Flax* is one that we are inclined to think might well reward the labor applied to it, if that labor were enlightened by a knowledge of the most approved methods of cultivation, and of preparation for market. Professing not to be ourselves by any means well versed in the details of this branch of industry, it is our intention to seek the best lights to be had; not only on this, but in regard, also, to *Hemp* and to all other articles, which, though of less importance in amount, serve yet to make up the aggregate of National wealth. May it not be assumed that the extension of the growth of flax is restrained not only by the substitution of cotton, as a cheaper article of clothing, and by the dearness of labor in our country, but also by ignorance of the best kind of land, and mode of preparing it: and especially by an impression that *its cultivation is attended with great exhaustion of the soil*?

We have just received from England a work lately published there, which appears to go fully into all other views of the subject, besides "*the improved mode in the cultivation and management of flax.*"

From much more that is said on the point of its being a great exhauster, and in contradiction of that impression, we have only room now for what follows on the next page.

We have on other occasions, intimated how much better it would be to form associations for the promotion of the knowledge and the growth of *particular branches* of industry, than to attempt, vainly as we do, to achieve great improvements, by means of a single society to embrace a great number of objects. Aiming to do too much, we end by accomplishing next to nothing.

In Ireland, a society was lately formed, called the "*Flax Improvement Society.*" Under its auspices behold the steady increase which has taken place! In the spring of 1844 the estimated quantity of flax sown was 40,896 hogsheads of seven bushels each, while in 1843 it was but 37,400. On the estimate that each hogshead would sow three acres, the quantity of land in 1843 was 112,200; and in 1844, 122,688—increase 10,488 acres. Suppose each acre, according to their estimate, to give an average produce of 600 of scutched flax, the entire produce of Irish flax, in 1843 was 36,465 tons and in 1844, 39,611, being an additional *value* of £141,507 or more than half a million of dollars. In three years, since the formation of the society, the *increase* in the value of the flax crop is estimated at £675,000 or \$3,375,000, a sum, says the writer, which would formerly have been paid in bullion to foreigners, but is now circulated among the farmers and laborers of Ireland.

May we not bring about the same proportionate results for our country, with silk and flax, wool and hemp, and grapes and wine, and other things? Help us, good readers, help us in these inquiries!

James McAdam, secretary to the Belfast Agricultural Society, says, "As a proof of the great demand for flax at present, I may mention that from *this port alone*, orders are now out for 300 tons of flax from Egypt, and for 2000 to 3000 tons, value £70,000 to £100,000 (\$500,000) from the Baltic; and this in spite

of the largest home-grown crop for several years. There have lately been erected in this neighborhood 60,000 additional spindles, which will be at full work, during the ensuing year, and which it is calculated will consume 3000 tons *additional* flax, of the value of half a million of dollars yearly.* There are in Leeds sixteen extensive firms engaged in spinning flax, who keep in constant employment at least 10,000 hands.*

Why cannot America rival them in this, as it has done in the manufacture of cotton and wool? Are not all the mountain valleys, in the neighborhood of our immeasurable but unused water power in the south and south-west, exceedingly well adapted to the growth of flax? But as to the exhausting nature of the crop, says the writer in hand:

"The main point upon which we rest our assertion that flax is not necessarily an exhaustor of the soil, as far as its composition is instructive on this point, is this: *Exhaustion of the soil*, as the word implies, is the removal out of it of those elements of vegetable food which it contains, and in the abundance of which its fertility consists. Now plants derive all their mineral portions from the soil—all those portions, in fact, of which, when they are burnt, their ashes consist—and upon the quantity and quality of them their power of exhausting the soil depends.

"Taking the whole flax plant, when harvested, Dr. Kane found it to contain 5 per cent. of ashes; which, comparing it with other plants, is a large proportion: but the whole of the plant need not be carried off the farm. The fact is, *nothing but the flax should be carried off the farm; the seed should be consumed upon it; the steeping-water should be used as liquid manure—and none better can be applied; the bone or stalk on which the fibre grew, when separated from the flax by the operation of breaking and scutching, should be burnt—as it will not rot for years as manure—and carried to the dung-heap.* The fibre is the *ONLY THING carried to market*; and the point to be ascertained, by one who cultivates flax as he ought, in order to make up his mind as to the exhaustion of his farm consequent on its cultivation, is the mineral matter carried off in the fibre: and this, on Dr. Kane's authority, and for the satisfaction of all who wish to cultivate the crop, we proclaim to be most insignificant in quantity; in fact, you may take a bundle of flax fibre, and burn it, and it will leave no ashes.

"I shall conclude these remarks by adding, from the columns of the *Agricultural Gazette*, a report of the speech of Dr. Kane, on this subject, at the Markethill Agricultural Society. The chairman, W. Blacker, Esq. said:—Gentlemen, I beg now to request your particular attention to such observations as Dr. Kane may be kind enough to make."

"Dr. Kane said that he felt great pleasure in acceding to Mr. Blacker's request that he should endeavor to explain to the farmers present the principles upon which the employment of the refuse of the flax crops, as manure, is proposed. It is really very simple; and he felt satisfied that, in that neighborhood, where so much activity and intelligence were applied to the improvement of Agriculture, it only required that the reasonableness of any practice should be shown, in order that its adoption in practice might be secured. Every farmer present was aware that crops exhausted the soil; that the plants take out of the ground a number of materials, and that it was necessary to restore a similar material to the ground, in order to keep up its fertility; therefore, the manure which the farmer puts in with or before his seed is, in a degree, the raw material of which the grown crop is to be made. It is just as much a part of the plant as the seed itself. When the farmer sows and sends away his grown crop, to be used for food, as in the case of wheat, or oats, or potatoes, he thereby sends away and sells the essence of the manure which he had put into the ground; and, as he thus gets paid for the manure, when it is exhausted, he must put in as much more for the next crop, which is to be dealt with in the same way. Now, in the case of flax, there is the important peculiarity that it is not eaten; and hence does not return to the land any manure in the ordinary way, while it takes out of the soil just the same materials as oats or potatoes; so that it is really a very exhausting crop, if we only look to the growing of it. But the flax crop differs from other crops in this—that the value of oats or potatoes, and all food crops, depends on what they take out of the ground; while the valuable part of the flax is the fine fibre, or thread, which has taken nothing out of the ground. If you burn away a bundle of flax-straw, it will leave behind a large quantity of white ashes, which consist of the different substances which the plant took out of the ground; but if you burn away a bundle of well-dressed flax, it will leave no ashes. Now, what has become of the ashes? They have evidently been carried off with the waste parts of the plant in the

* According to the census of 1840, there were in the United States but 1,628 persons employed in flax manufactures altogether, and the whole capital invested, is put down at \$208,067; eighteen States are put

steeping and dressing. They are thrown away; and yet they are materials of which the plant had robbed the soil, and which should be given back to the soil, in order to keep up its fertility. To the practical farmer it is, therefore, of the greatest importance to recollect this principle—that the fibre or valuable part of the flax is not formed by the exhaustion of the soil; but that the materials which the plant takes out of the soil are all found in the steep-water and the chaff; and that, if these be returned to the soil, they will restore its fertility, and that thus the flax crop may be rendered one of the least injurious to the ground, and most remunerative to the farmer. I am aware that there are many persons here ready to speak as to the practical use of flax steep-water as a manure. I shall, therefore, rest satisfied with having stated the principle on which it rests. The flax crop can be rendered little or not at all exhausting, by a proper use of its residues as manure; but it must be recollected that, unless these residues be thus economized, the flax crop is one of the most severe the land can have, and that the loss of substances to the soil is actually greater than with a corn or potato crop.

“Since the meeting, Mr. Blacker has received the following letter from Dr. Kane, in reply to some queries of his, relating to the exhaustion of the soil by the ripening of the seed of the flax:

“I am glad that you have noticed the subject of the ripening and collecting of the seed of flax, as it is important that farmers should not fall into the error of extending my views beyond their proper limit. As long as the flax is grown for its fibre, the ligneous tissue being formed from air and water, the exhaustion of the soil may be counteracted by restoring to the soil, by means of the flax-water, what had been taken away. But when flax is grown for food, or for seed—when this seed is separated by rippling, then it becomes like wheat, or any other food crop. The formation of the seed takes from the soil nitrogen and phosphates which are consumed in use, and cannot be returned to the soil. Hence the economy of the residual flax products as manure refers to the crop as grown for fibre, and does not extend to the growth for food or seed; these, like wheat or potatoes, should pay independently for the good they take out of the land. The flax-chaff is certainly in itself very intracurable, but not so much so as it looks. When steeped, all that is of any use is dissolved out; and the dry chaff, when worked up along with fermenting stable-dung, will pass into a good mould. The chaff is, however, of little importance compared with the flax-water, which certainly holds dissolved nine-tenths of all that the plant derived from the ground.

“To W. BLACKER, Esq.

ROBERT KANE.”

[We have applied to a gentleman of Louisville, Ky., of great experience, from whom we hope to get the best practical information to be had on the whole subject of raising and preparing hemp for market.]

We have not room now for the full development of this subject, but will recur to it, and to hemp culture, until both shall have been fully discussed in reference to our capabilities for their production.

In a discussion in the American Institute, Mr. WAKEMAN, the vigilant guardian and friend of American manufactures—not misled, it may be hoped, by his stringent principles as a protectionist—argued that before long we should probably prepare flax for $1\frac{1}{2}$ instead of 3 cents a pound, and improve in machinery. We ought not, he contended, at all events, to depend on foreign nations for that or for any other necessity of life. “*There is no land,*” said he, “*in Europe equal to ours for the production of flax and hemp, viz. the rich alluvial soil of the West.*” Although this may be *un peu fort*—going it rather strong—the whole subject is worthy of careful inquiry, and shall have it as far as depends on this journal.

In the discussion referred to, in the Farmers’ Club, Mr. BILLINGS, under examination, testified: “I pull or cut the flax green. We cut it now, having a proper cradle to do it with. A man cuts an acre in a day. I dry it in the shade. I rot it in water at 90 degrees of heat. The acetous fermentation takes place, and *in three days it is rotted*. I put it then in close rooms, heated until it is dry. It was said formerly that our flax was inferior to British, Belgian, or French; but, when our flax is heated as I have stated, it is a *superior article to any of them*.” Ought we not to be satisfied to have things as good as other nations? Is there no danger that all our crows will become the whitest? Mr. Billings confirms the statement that when flax is not allowed to go to seed, it does not exhaust the land one-half so much. It exhausts, he says, about as much as wheat.

Mr. B. has patented a machine for dressing hemp and flax, with which, he says, "seven men will dress in one day six hundred pounds of flax, and so much less tow is made by it that it saves twenty per cent. of the flax by my operation; and the same process answers for hemp."

If farther trials should well sustain the pretensions of these improvements by Mr. Billings, the result of several years of devoted attention to the subject, they will give him higher claim to public consideration than if he had invented some "infernal machine" for burning a ship or a town, and all in it, at the safe distance of ten miles. But we doubt if his improvements, any more than Fulton's or Whitney's, would draw him one-thousandth part as much applause as would be awarded to the commander in the use of such a gun; or if they will, any more than Fulton's, or Whitney's, or Fisk's, or Rumsey's, draw him *one cent out of the public treasury!*

BANFIELD, in his minute and valuable notes on the Industry of the Rhine, speaks of a machine for heckling and scutching flax. As it is new in that country, and possible that it may be thought worthy of being introduced in ours, we extract what he says:

"A machine of *simple construction, and demanding little outlay*, has been invented by M. Kuthe, of Lippe Detmold. Its utility in heckling and scutching flax has been *carefully tested*, and may be estimated from the accompanying table.

"The improved instrument affords a gain of fifty per cent., which, as in the case of the threshing-machine, is of no importance on a single morgen (about three-fourths of an acre), and would not even be realized on so small a scale; but on 500 morgens the saving amounts to no less than £1,000.

| | Common Land Brake. | | | | Flemish Brake. | | | | Kuthe's Brake Machine. | | | |
|-----------------------|--------------------|------|-------|------|----------------|------|-------|------|------------------------|------|-------|------|
| | Water. | | Dew. | | Water. | | Dew. | | Water. | | Dew. | |
| Steeped in | Flax. | Tow. | Flax. | Tow. | Flax. | Tow. | Flax. | Tow. | Flax. | Tow. | Flax. | Tow. |
| Scutched | 284 | 140 | 285 | 144 | 293 | 80 | 311 | 57 | 320 | 72 | 298 | 42 |
| Heckled | 148 | 132 | 140 | 142 | 157 | 132 | 149 | 158 | 163 | 154 | 154 | 141 |
| Dressed.....lbs. | 148 | 272 | 140 | 286 | 157 | 212 | 119 | 215 | 163 | 226 | 154 | 183 |
| | £ | s. | d. | £ | s. | d. | £ | s. | d. | £ | s. | d. |
| Market value..... | 7 | 10 | 0 | 7 | 4 | 6 | 9 | 2 | 2 | 8 | 17 | 4 |
| Cost of dressing..... | 1 | 15 | 4 | 1 | 11 | 7 | 2 | 7 | 10 | 2 | 7 | 10 |
| Profit..... | 5 | 14 | 8 | 5 | 12 | 11 | 6 | 14 | 4 | 6 | 7 | 8 |
| | 8 | | | 11 | | | 8 | | | 1 | 6 | |
| | | | | | | | | | | | 7 | 11 |
| | | | | | | | | | | | 5 | |

CRICKETS.

"Far from all resort of mirth
Save the cricket on the hearth."

It is a common superstition in some parts of the country, handed down among many things, good and bad, from our English ancestors, that if the crickets forsake a house which they have long inhabited, some evil will befall the family. In like manner, the presence or return of this cheerful little insect is thought to be lucky, and to portend some good to the family.

When, however, they increase to a great degree, they become troublesome pests, flying into the candles, and dashing into people's faces. In families in such times they may be likened to Pharaoh's plague of frogs, getting into "their bed-chambers and upon their beds, and in their ovens, and in their kneading-troughs." They may be destroyed by gunpowder discharged into their crevices and crannies, or, as wasps are, by vials half filled with beer, or any liquid, set in their haunts; for, being always eager to drink, they will crowd in till the bottles are full.

ON THE ART AND USEFULNESS OF BUDDING.

As no time is to be lost by those who propose to provide themselves with choice fruit of every sort by this beautiful process, we have decided to devote to it as much space as may be necessary to enable the most inexperienced to perform the operation.

The season most appropriate for it, according to English writers, extends to the last of August, but the best American authorities say that budding may be practiced in this country to the middle of September. The simple rule, however, is, that it may be done at any time that, and only when, the sap flows so freely as to admit of the bark being easily separated from the wood of the stock to which the bud is to be attached.

Budding, we need hardly say, is the art of making the bud unite to the stem or branch of another tree or shrub. Delicate kinds, says Johnson, are strengthened by being *worked*, as it is technically termed, upon more robust stocks.

A bud contains the rudiments of a plant, or of part of a plant, in a latent state, until season and circumstances favor its evolution. A close analogy exists between a bud and a bulb, which is also a reservoir of the vital powers of the plant, during the season when those powers are torpid. Buds consist of scales closely enveloping each other, and enfolding the embryo plant or branch. They resist cold only until they begin to grow; and hence it is, according to the nature and earliness or lateness of their buds, that plants differ in their powers of bearing a severe or variable climate. By buds, says Smith, as we well know, plants are propagated; and in that sense each bud is a separate being, or a young plant in itself; but such propagation is only the extension of an individual, and not a reproduction of a species, as by a seed. Accordingly, all plants increased by buds, cuttings, layers, or roots, retain precisely the peculiar qualities of the individual to which they owe their origin. If those qualities differ from what are common to the species, sufficient to constitute what is called a variety (as, for instance, the seckle pear, or black tartarian cherry, as distinguished from other pears or cherries), that variety will be perpetuated through all the progeny thus obtained. This fact, says the same writer, is exemplified in a thousand instances, and none more notorious than the different kinds of apples—all which, says he, are varieties of the common crab, *Pyrus Malus*; and he fully assents to the opinion of Mr. Knight, that each individual thus propagated, by buds, cuttings, layers, or roots, has only a determinate existence—in some cases longer, in some shorter—and to this cause he attributes the fact that many valuable varieties of apples and pears, known in former times, are now worn out, while others are dwindling away before our eyes. We have a distinct recollection of two or three kinds of apples, and one of pears, on our grandmother's estate in Calvert county, Maryland, all aromatic and delicious fruits, which we feel confident have become extinct. *Propagation by seeds* is therefore recommended by botanists and horticulturists of the most extensive inquiry and enlarged observation, as the only true reproduction of plants, by which new and valuable varieties may be obtained, each species kept distinct, and all variations effaced; for though, says the author we are quoting, new varieties may arise among a great variety of seedling plants,

it does not appear that such varieties owe their peculiarities to any that may have existed in the parent plants.

The object obtained by budding is an early and rapid multiplication of any particular kind of fruit; and though it is but too probable that many of our readers may not have provided themselves with nurseries of stocks to bud upon (as every one should do, considering that they may be raised as easily, though not quite so quickly, as corn or peas), still there are few but who may find about their grounds or orchards subjects on which they may at once bud choice apples, and pears, and peaches, and cherries, from choice kinds within their reach.

Johnson says that buds of almost every species succeed with most certainty if inserted in shoots of the same year's growth; but he says the small walnut buds succeed best which are taken from the base of the annual shoots, where these join the year-old wood of that from which the bud is taken. Buds, says he, are usually two years later in producing fruit than grafts. It is recommended, however, as a general rule, that buds be taken from the middle of the shoot, as those from its point are said to make wood too freely, and those from its base to be more unexcitable, and consequently less prompt to vegetate. So much quicker and more rapid is the process of budding than grafting, that, Mr. Downing says, a skillful budder, with a clever boy following him to tie the buds, is able to work from a thousand to twelve hundred nursery stocks in a day; and he adds, among other reasons for giving preference to budding over grafting all stone fruits especially, such as peaches, apricots, &c., that *they* require extra skill in grafting, whereas they are budded with great ease. According to the same high authority, the several fruit-trees come in season for budding in the following order:—Plums, cherries, apricots on plums, apricots, pears, apples, quinces, nectarines, and peaches. Before commencing, says Mr. Downing, you should provide yourself with a budding-knife, [Fig. 1,] about four and a half inches long, having a

Fig. 1.



rounded blade at one end—and an ivory handle, having a thin, rounded edge, called the *haft*, at the other. But let not any indolent reader excuse himself that there is no *exactly* such knife within his reach! True, every farmer of becoming pride will be provided with these small affairs, just as the true disciple of Izaak Walton will take care, before the season comes on, to have all his fishing tackle in apple-pie order: his bamboo, and, for lighter fishing, his white cane rod; his lines of silk, of hair, and of silk-worm gut, manufactured from the intestines of that wonderful insect—being, for its circumference, the strongest substance known to the angler. He will have his tip-capped float, and his cork float, and his plugged float; he will have his winch, his basket, his landing net, his naked hooks, and his flies—his May fly and his ant fly, his dun-red hackle and his candle fly. Say, ye spirits of old uncle Izaak, and of Cotton, and—no less known in his day and his sphere—of our old fellow angler, Col. Jack Thomas! what will he not have that a genuine angler should, that all may be O. K.? Yet we have seen a good mess of fish as ever was made into “Black Dan” chowder, taken at old Rock Hall, with a plain cedar angle and common twisted-cotton line. Why then should not the farmer of the true grit take care to have all *his* tackle, too,

in perfect order at a moment's warning?—his knife of peculiar make, as laid down by authority, for budding; and soft matting for wrapping; and suitable wax for binding up and healing the wounds of trees budded and grafted, or such as, having their limbs torn off by the wind, require the care of the surgeon?—Why should he not have always in perfect order his knives adapted also for butchering, and his fleams for bleeding, and his shears for shearing his flocks—just as a dentist or a surgeon has all his tools and instruments in perfect trim? Are farmers to be, in truth and for ever, what the world is prone enough to consider them—a poor, spiritless race of drudges, without any of that pride of profession, and *esprit du corps*, which animates the followers of other pursuits—the racer, the sportsman, the shipmaster, and the military man—to excel in their knowledge, and preparations, and appointments, and in their readiness to challenge public scrutiny and comparison, each in the *line of his calling*? But feelings of indignation are overcoming and running away with us, as usual, whenever we think of an *American farmer*, standing on *his own* freehold estate—the monarch of all he surveys—being content to drudge, and live on, from hand to mouth, without any of that forecast, neatness, or ambition of excellence and honorable distinction, without which he can hardly expect to reach, much less rise above, vulgar mediocrity, and the want of which always marks him a victim and a hobby, to be fleeced and ridden by misers and demagogues!

The manner of performing the operation of budding is thus described by the voluminous author whose life and writings were briefly memorialized in our June number. The method he recommends, and that which is in general use, and which long experience has proved to be best, is called "*T budding*," [fig. 2]—so called from the form of two cuts that are made in the bark of the stock to be budded—or "*shield budding*," as it is sometimes called, from the form of the piece of bark on which the bud is seated, [fig. 3,] being in the shape of a shield when it is prepared to be inserted within the T cut in the bark of the stock.—

"*Scallop budding*" is also described by Loudon, and M. Thouin describes twenty-three modes, which we mention only to show the reader how much thought and ingenuity have been bestowed on an apparently small matter about which it may happen that he, a free born American republican landholder, in the pride of his position and circumstances, has never spent a thought. For every useful purpose it is deemed, however, sufficient to give the following directions for *shield budding*.

With the budding knife make a horizontal cut across the rind, quite through to the firm wood; from the middle of this cross or transverse cut make a slit perpendicularly downward, an inch or more long, going in this case also quite through the bark into the wood. This is done as shown in fig. 2. Proceed with all expedition to take off a bud, holding the cutting or scion, fig. 4, in one hand, with the thickest, or that which was the lower end, outward, and with the knife in the other hand, enter it about half an inch or more below a bud,

Fig. 2.



Fig. 3.



Fig. 4.



cutting nearly half way into the wood of the shoot, and then continuing it with one clean, slanting cut, about half an inch or more above the bud, so deep as to take off part of the wood along with it, the whole about an inch and a half long, as in fig. 3; afterward cutting off at *a* the leaf under which the bud is situated, leaving its foot-stalk attached to the bud, that by it you may hold it between your lips while with your budding-knife the lines are cut in the stock, where the bud is to be inserted, which should be at a place where the bark is smooth and free from any bruises or knots, and on the side rather from the sun. Then directly with the thumb and finger, or point of the knife, slip off (according to the English and European fashion,) the woody part remaining in the bud, which done, observe whether the germ or eye of the bud remains perfect; if not, and a little hole appears in that part, it is imperfect, or, as the gardeners express it, the bud has lost its root, and another must be prepared. Next, slip down the bud close between the wood and bark of the stock tree, to the bottom of the slit. The next operation is to cut off the top part of the shield or bark of the bud even with the horizontal first-made cut in the bark of the stock, so as to let it completely into its new residence, and to join the upper edge of the shield, with the cross or transverse cut, in the stock, that the descending sap of the stock may immediately enter the bark of the shield, and protrude granulated matter between it and the wood, so as to effect a living union between the bud and stock. The parts are now to be immediately bound round with a ligament of fresh bass, previously soaked in water, to render it pliable and tough, or, as Mr.

Fig. 5.



Downing says, with soft matting, to be tied firmly over the whole wound, commencing at the bottom, and leaving the bud and the foot-stalk of the leaf only, exposed to the light and air, as in fig. 5, not too tight, but just sufficient to keep the whole close, and exclude the sun, air and wet.

It will be seen by the above that according to the English and European method of performing common shield budding, you are cautioned to be careful to take out from the bark on which is the bud the small piece of wood on which the bark is, and which has served you up to this time to keep the bud and bark from drying and shrinking; but this "nice matter," as it is called, it is important to bear in mind, is altogether dispensed with in the American mode of shield budding; and the "American mode of shield budding," says Mr. Downing, (whose works we ought to presume form a part of every gentleman farmer's library,) "is found greatly preferable to the European mode, at least for this climate. Many sorts of fruit trees, especially plums and cherries, nearly mature their growth, and require to be budded, in the hottest part of our summer. In the old method," says Mr. D. "the bud having only a shield of bark, with but a particle of wood in the heart of the bud, is much more liable to be destroyed by heat than when the slice of wood is left behind in the American way. Taking out this wood is always an operation requiring some dexterity and practice, as few buds grow when their eye or heart-wood is damaged. The American method, therefore, requires less skill, can be done earlier in the season, with younger wood, is performed in much less time, and is uniformly more successful. It has been very fairly tested upon hundreds of thousands of fruit trees in our gardens for the last twenty years, and, although practiced English budders coming here, at first are prejudiced against it, as being in direct opposition to one of the most essential features in the old mode, yet a fair trial has never failed to convince them of the superiority of the new one."

Having thus gone through with a process so light, and so interesting in its nature and results, that every schoolmaster might and ought to teach it, were it only for amusement at play-time, in the country schools, and even to the girls who are to make housewives, as well as to boys who are to be their husbandmen; we have only to copy what we find in the books, and what is the result of ample experience as to the *future treatment*.

In about two weeks after the operation it will be seen, by the roundness and healthy look of the bud, whether it has taken; and we are assured that not more than six or eight per cent. of them ought to fail. In about a fortnight after, let the bandage be loosened, so as to allow the whole plant to swell, and in about five weeks from the time of budding, it may be removed altogether; but sometimes, when the budding has been performed very late, the bandage is left on through the winter.

Just when the sap begins to move in the spring you "head down" the stock at about half an inch above the bud, by beginning behind it, and making a sloping cut upward. A piece of the stock is sometimes left, about six inches long, to which to tie the first summer's shoot, to prevent it from being broken by the wind; a precaution not amiss when the shoot from the bud is exposed to high winds; but even then it is suggested to be better, if you see any danger, to tie a short stick on the top part of the stock, and to this tie the young shoot, when the sap will all go into the shoot through and from the bud, instead of being divided between it, and six inches of the stock sometimes left as above stated. Mr. Downing bears testimony to the great advantage, when budded trees do not take readily, in having recourse to Mr. Knight's excellent mode of budding thus described in the Horticultural Transactions, and in which he employed two distinct ligatures to bind the buds in their places: "One ligature was first placed above the bud inserted, and upon the transverse section through the bark; the other, which had no farther office than securing the bud, was applied in the usual way. As soon as the buds had attached themselves, the ligatures last applied below were taken off, but the others were suffered to remain. The passage of the sap upward was in consequence much obstructed, and the inserted bud began to vegetate strongly in July; and when these had afforded shoots about four inches long, the remaining ligatures were taken off to admit the excess of sap to pass on. Thus, the upward sap being arrested, the union of the upper portion of the bud (which in plums frequently dies, while the lower part is united,) is completed, and success secured."

Enough for the present and for the season. Having entered on the subject, the reader may expect the whole management of fruit and timber trees, in all its bearings, to be presented in a manner to diffuse the most recent and reliable information to be had. We will only add, that our attention was called to this particular subject too late, we regret to say, for the July number.

AYRSHIRE COWS.—Those who have visited Mr. PRENTICE's farm, near this city, can hardly have failed to notice among the stately Durham cattle there, a small family of Ayrshires. The latter consist of a cow which was imported from Scotland in 1842, and some four or five of her descendants of the first and second generations, all of which bear a striking resemblance to the first named cow. Only one of the young stock has yet bred, but the imported cow has had a calf every year since she has been in this country, and has been in milk nearly the whole time. Though of very small size, she is in shape a perfect model of a milch cow, and her product at the pail is remarkable—giving this season, on grass feed, upward of *twenty quarts* of milk per day; the quantity having been ascertained by actual measurement. Considering her diminutive size, which, compared with most other cows, scarcely bears a greater proportion than that of the Shetland pony to a coach horse, we think this very extraordinary.

[Albany Cultivator.]

WHEAT.

ON THE SOIL SUITED FOR—PREPARATION OF SEED, AND SOWING—ITS DISEASES, &c.

THE number of persons and amount of capital employed in the cultivation of this grain, and its great value, being in that respect the second, and in the number of bushels third only on the list of our staples—and the time, moreover, being nearly at hand for sowing—all make it proper now to submit any observations by which we may hope to benefit American wheat growers.

Few subjects have, it is true, undergone more ample discussion; and though it may be difficult to reflect a single ray of new light upon it, it may be useful to bring to one focus, some of the best of such as have been shed by the many who have favored us with the results of their observation and experience.

For various expositions of the wheat *trade* of the United States, over and above the full commercial statistics to be found in HUNT'S MERCHANTS' MAGAZINE, the public has again been brought in debt, lately, through the NATIONAL MAGAZINE, to Mr. EDWIN WILLIAMS, of New-York, for interesting and clearly arranged data on the subject. We have ourselves been favored by him with valuable statistical details, which we are obliged to reserve for a more convenient season, not having room now for more than such "*field notes*" as must be attended to "now or never"—until another season rolls round. And this is one of the peculiarities in the position and pursuits of the agriculturist! Few of any other class have so much occasion for *foresight* as he. Others may hope to supply the omissions of to-day by the performances of to-morrow. Not so with the farmer. By him measures must be taken at once which many months, and even a whole year may be required to consummate; and this, by every young farmer who takes a right view of it, will be esteemed as one of the boasts and beauties of his profession, inasmuch as it *implies* thought, forecast, intellectual attention, judgment!

Though, as we have said, statistical and commercial views and calculations as to the probable production of wheat in our own and foreign countries as forming a topic of interesting general inquiry, may be postponed until after seeding time, it will be well for the farmer to think of these now, so far as to form an opinion of its probable *price* in comparison with other grain crops, that he may the better decide whether he may not even now more profitably devote to some other grain or other object, land which had been laid aside for wheat—to *barley*, for instance—of which we may treat elsewhere and separately, even in this number, if we can find room.

And here, again, opportunity offers to remind, and even to congratulate the young farmer on the many occasions for the exercise of his mental faculties and the display of his judgment in the practice of his profession. It may, for example, seem highly expedient, at first view, to sow or plant a particular crop, for the reason that the immediate result will be far the most profitable; and yet if he looks ahead so far as to see the effect of the crop in exhausting the land so much more than others with which it may be compared in his calculation, he may discover, before he finishes the investigation, that he is playing the foolish part of the man in the fable of the Goose and the Golden Eggs.

Where two plants or grains demand and appropriate to themselves the same salts and elements of subsistence existing in the soil, it is not expedient to have them follow in immediate succession. Wheat, we are told, for example, will not grow on a soil that has produced wormwood, and, *vice versa*, wormwood does not thrive where wheat has grown, because they are mutually prejudicial by appropriating to themselves the *alkalus* of the soil.

One hundred parts of the stalks of wheat, says Sir H. DAVY, yield 15.5 parts of ashes. The same quantity of the dry stalks of barley, 8.54 parts: and one hundred parts of the stalks of oats, only 4.42. The ashes of all these are of the same composition. We have, says LIEBIG, in these facts, a clear proof of what plants require for their growth. "Upon the same field," he adds, "that will yield but one harvest of wheat, two crops of barley and three of oats may be raised." The standard weight for barley is 48 pounds per bushel, the present price 56 cents; and persons familiar with the cultivation are of opinion that land which will produce twenty-five bushels of wheat to the acre will yield thirty-five of barley. It is found to be particularly well adapted to the protection and bringing forward of a grass crop, as clover and timothy, which in the neighborhood of New-York are almost invariably sowed on the same land—the clover going out after the first year's cutting, while oats, if on land rich enough to produce a heavy crop of themselves, or of wheat or grass, is apt to lodge, causing destruction to itself and smothering the young grass under it.

But supposing the farmer to have determined on sowing a certain space of land in wheat—let us proceed with the subject.

Here, again, we must beg the reader to bear in mind that if we go not now so fully into this subject and occasionally into others, as he might naturally expect us from their obvious importance, it is (and frequently will be) because we must bear in mind that we and he have a *great book before us*; one in which, in their proper turn, he may expect such subjects to be fully exhibited—for instance, in STEPHENS'S BOOK OF THE FARM, appearing to him, perhaps, so far, to be so little interesting or practical, we shall come in due season to the article *on wheat*, and he may form some notion of the fullness with which it will be treated, when he is told that besides well executed engravings of the different kinds of wheat, and machines for sowing and cleaning, the subject itself will be treated under all these heads: *Wheat—Spring sowing of; English method—Classification of it by the ear, by the grain—Rules for judging of its quality, color, &c.—Kinds best adapted to various purposes; the best for seed—Detection of damaged—Best way of preserving in granaries—Grinding of it—Quantity and bulk of flour, bran, &c. yielded by—Its chemical composition—Its microscopic structure—Amount of nutritive matter in—Manufacture of starch from—Straw of—Varieties of—Weeds infesting the crop, and their removal—Insects and diseases affecting—Proper degree of ripeness for cutting—Cutting and stooking of—Carrying in and stacking of—Comparative weight of grain, straw and roots—Autumn sowing of—Plowing, &c. of the land for it—Preparation of the seed and sowing—Best varieties—Sowing by dibbling; expense of this—Saving of seed—Description of the process of germination.*

Thus the reader may judge how full will be the description on all other great branches of Agriculture, and how little ground is left open for us upon this one.

Although it might be instructive and useful, as a matter of general information, to speak of the *kinds of land* best adapted to the growth of wheat, and the principles on which depends their adaptation to that grain, that too may be

deferred, because it is to be supposed that no choice is left to the farmer, for this year: hence we need now only allude to the fact, so well known, that while some lands are much more productive than others in the yield of Indian corn, tobacco, cotton, rice and other crops, they fall infinitely below these others in *wheat*.

As to the different varieties of wheat, each farmer must be left to his choice, and little can be said beyond what every one knows, to guide him in his selection. For ourselves, we are the less disposed to indicate any particular one absolutely, seeing how liable all varieties are to be affected and changed by change of soil and locality, even from the eastern to the western shore of the Chesapeake Bay. Oh! that we could speak on this and other points illustrative of wheat husbandry, with the pen and the experience of our friend the Farmer of "*Otwell!*"

In our country, the wheat which possesses the highest character for the excellence of its family flour, is the *white wheat of the eastern shore of Maryland*, perhaps, particularly that of Talbot County, and that which comes to the celebrated Richmond mills, from the shores of the James River below them. In the State of New-York, General HARMON has gained deserved and enviable celebrity by his persevering attention to this and other important branches of his country's industry.

But admitting this liability in wheat to change of character by simple translation to situations and soils less congenial to the perfect development of its most valuable properties, yet how easy for the farmer to recur again and again, even from year to year, to the district and the grower who produces for him a kind which on trial even for a single season he finds will well reward the trouble and expense of thus procuring it? Ay, and should not even the reputation of sending a crop of superior quality to his market be its own sufficient inducement and reward for a right minded, honorably ambitious young farmer? How much more compatible with the public welfare would be that sort of ambition! How much wiser in a people and government to stimulate, and encourage, and succor it, than to bestow all honors and applause on those who figure in the foreground of enterprises that consume the substance of the people, and that, while they beget individual misery and national hatreds, must be recorded in the blood of our fellow creatures!

In reference to the soil and the choice of seed, we may aptly quote again Rev. W. L. RHAM, who dwells on the importance of making a good selection, saying,

"Some farmers like to change their seed often; others sow the produce of their own land continually, and both seem persuaded that their own plan is the best. The fact is, that it is not always the finest wheat that makes the best seed, but it depends on the *nature of the soil on which it grew*. Some soils are renowned, far and wide, for producing good seed, and it is well known that this seed degenerates in other soils, so that the original soil is resorted to for fresh seed. Many places have been noted for this peculiarity, and among them we may mention the parish of Burwell in Cambridgeshire. The wheat which grows there is mostly sold for seed, at a price considerably above the average."

At the hazard of protracting this article to an unreasonable length, we must yet copy from the author just referred to what seems worthy of attention on this point:

"It has been asserted of late, and we have no reason to doubt the assertion, that the various *noted seed-wheats*, when analyzed, are found to contain the different elements of which they are composed in nearly the same proportion, especially the starch and gluten. For bread, that which contains most gluten is preferred, as we observed before; but to produce a perfect vegetation, there should be no excess of this substance, nor any deficiency. The seed also should have come to perfect maturity. This last is usually obtained by beating the sheaves over a block of wood or a cask, without untying them, by which means the ripest seeds fall out. The proportion between the starch and gluten is easily ascertained by

carefully washing the flour when the wheat has been ground. It is most convenient to tie up the flour in a cloth, which, shaken and beaten in water, will let all the starch pass through, and retain only the gluten. The operation should be continued as long as the water is tinged with the white starch. Any one can readily make the experiment; and as the sort wheats vary much in the proportion of the gluten they contain, the difference will be readily ascertained. This leads to a practical conclusion: if we wish to grow any peculiar sort of wheat for seed, and if we find that, by our preparation of the soil, or its original composition, we produce a wheat in which the gluten and starch are in a different proportion from that of the original seed, we may conclude that this is owing to more or less of azotized matter in the soil, that is, more animal manure, or more vegetable humus; and by increasing the one or the other, we may bring our wheat to have all the properties of the original seed. This is a valuable discovery, and deserves to be fully confirmed by experience."

The attention of the reader would be but ill directed to this subject, without drawing it to some practical truths evolved by chemical investigation—such as bear upon the subject of the constituent elements of this grain, and the inferences to be deduced therefrom, as to the soil and the manures best adapted to its growth. These points are well laid down again by the reverend gentleman who, if his religious be equal to his agricultural dissertations, deserves certainly not to rank among those of his cloth after whom, it is said, the mile-stones in England are called "*Parsons*," for the reason that they point the way, but never go it!

"Improved chemical analysis has discovered various substances in minute quantities in the grains and straw of wheat; and this has led to the doctrine that these substances, being essential to its formation, must be excellent manures for it, if they do not already exist in the soil in sufficient quantities. Most of these substances are found in all soils which contain a due proportion of clay. Silica in a very minutely divided state, and probably in combination with ammonia or potass, seems one of the most important to give due strength to the straw; and hence in some soils potass or wood-ashes which contain it may be advantageously used as manures to the young clovers preceding the wheat. The analysis of the ashes of grains of wheat chosen out of the ears, by Theodore de Saussure, who is generally considered an excellent authority, gives the following results:

| | | | |
|-----------------------------|------|----------------------|------|
| Potass..... | 15 | Silica..... | 0.5 |
| Phosphate of potass..... | 32 | Metallic oxides..... | 0.25 |
| Muriate of potass..... | 0.16 | Loss..... | 7.59 |
| Sulphate of potass, a trace | | | |
| Earthy phosphates..... | 44.5 | Total..... | 100 |

The analysis of the ashes of the straw gave the following result:

| | | | |
|--------------------------|------|------------------------|------|
| Potass..... | 12.5 | Earthy carbonates..... | 1 |
| Phosphate of potass..... | 5 | Silica..... | 61.5 |
| Muriate of potass..... | 3 | Metallic oxides..... | 1 |
| Sulphate of potass..... | 2 | Loss..... | 7.8 |
| Earthy phosphates..... | 6.2 | | |
| Total..... | | | 100 |

The analysis of the ashes of the whole plant, when in blossom, gives of

| | | | |
|------------------------|-------|----------------------|------|
| Soluble salts..... | 41 | Metallic oxides..... | 0.5 |
| Earthy phosphates..... | 10.75 | Loss..... | 21.5 |
| Earthy carbonates..... | 0.25 | | |
| Silica..... | 26 | Total..... | 100 |

"By comparing these results it will appear that from the time of flowering to the maturity of the seed, a portion of the soluble salts is converted into earthy phosphates; that silica accumulates in the straw, but not in the grain; and as potass is the principal means of rendering the silica soluble, it is an important ingredient in a wheat soil, as well as the phosphoric acid. This last is found chiefly in animal manures."

The plainest and most recent experiment we have met with, on the application of lime to wheat land, as a manure, is found in a DISCOURSE ON THE USE OF LIME, delivered before the Agricultural Society of Albemarle (honored by its age and yet more by its results), at their fall meeting, 1845, by GEORGE BLETTERMAN, LL. D., which some friend has been good enough to send us. He thus relates a single application: "One experiment more, made by myself, with all the necessary care and accuracy, I shall add here to what I have already said on this subject. One acre of the field I mentioned to have been found, on analysis, to have been quite destitute of lime, was manured with stable manure, and plowed

in during summer. At seeding time for wheat the *half* of the said manured acre was *sprinkled with fifty bushels of lime*, bought for \$3, being the screenings or refuse of lime sold for building purposes. This lime was plowed into the soil, together with the seed. The produce of the half acre manured only, and not limed, was four bushels and a peck; that of the other half acre, equally manured, with the lime in addition, was seven bushels and three pecks. The wheat from the merely manured half weighed fifty pounds per bushel; that from the half acre both manured *and limed* weighed fifty-nine (being, in the aggregate, double the former in weight)—so that the first crop after liming, under rather unfavorable circumstances, paid both for the lime and the labor to haul it out.

It would seem, by-the-by, that manured land, to yield but $4\frac{1}{4}$ bushels, must have been extremely poor, or the loads of manure more like wheel-barrow than wagon loads. Nothing more indefinite than a “load” of manure—it’s like speaking of a stone that killed the man, which the witness said was as big as a lump of chalk!

A few days since, in company with several gentlemen, on Long Island, we walked over a farm, and looked at some lots of wheat, of nine acres each, growing after potatoes, which had received, as the farmer stated, *eighty wagon loads of manure*, for which he could have had \$1 50 per load at his barn-yard! But, then, he next got his something upward of 200 bushels of potatoes to the acre, off of several of these lots, which brought him 56 cents a bushel; and, this year, will reap his 30 bushels to the acre of Mediterranean, and 25 bushels of white wheat; and next he will get, from the same land, his $2\frac{1}{2}$ to 3 tons of hay for several years—say four to six years—to be consumed by cows, whose *manure is all retained on the farm!* Of these he keeps usually from 60 to 120, for all of which his stable is perfectly well arranged; and out of these he has had, at one time, a lot of 25, that yielded twenty-five quarts of milk each; all of which is sold at $6\frac{1}{4}$ cents a quart in the New-York market—making for these 25 in this flow of milk \$1 62½ a day each, or over \$40 a day for the 25, or for thirty days \$1,200!

But as, some of these days, we design to give, for the entertainment of more distant readers, the *statistics of one of these milk establishments*, let us return to the *preparation of seed wheat*.

We turn to this point of our subject the more anxiously, as we must confess, from the perusal of a letter just received from Col. N. GOLDSBOROUGH, of Talbot county, Maryland—dated *Otwell, 28th June, 1846*—in which we are sorry to find a passage, at once so dismal and so instructive, on the subject of *steeps*, or *pickling*, for seed wheat: “My wheat is wretchedly bad; fly, scab, rust, and smut—all, all, have assailed it. I abandoned my former plan of *liming and brining*, and adopted the *glauber salt*, which was so highly recommended: and it was carried out strictly to the letter; but I have been greatly disappointed.” Thus are we brought more emphatically to consider the subject of *steeps*.

Without waiting to inquire whether any kind of steep can act as a *manure*, to the extent of perceptibly increasing the crop—but meaning to do so, on some early occasion—the universality of the practice of steeping seed wheat in England, and by the most judicious of American farmers, as the means of preventing or diminishing certain diseases, as smut and rust, ought to be sufficient to prevail with every farmer *not to omit it*; for, besides that it is maintained, on the observation of the most observing and judicious, to be destructive of the fungi to which these diseases are said to owe their origin, the undeniable fact that it affords a ready and convenient method of floating off other seeds and unsound grains,

and other offal matter, ought to constitute a sufficient inducement to the practice.

The question is, what forms the best steep, and how it can be most easily put in use?

Virgil speaks of having seen farmers sprinkling their wheat with *carbonate of soda*; but Jethro Tull says, in 1660, that *brining*, as an antidote to smuttiness, was discovered in the following manner: "A ship-load of wheat was sunk near Bristol, in the autumn, and afterward at ebb all taken up, after it had been soaked in sea-water; but, it being unfit for making bread, a farmer sowed some of it, and, when it was found to grow very well, the whole cargo was bought at a low price by many farmers, and sown in many places. At the following harvest, all the wheat in England happened to be smutty, except the produce of this brined seed, which was all exempt from smuttiness. This accident has been sufficient to justify the practice of brining ever since." He elsewhere, however, conjectures that its exemption may have been owing to its coming from a country free from that disease.

For pickling wheat the following directions are given by Professor Low:

Let a tub be provided, and partly filled with urine, and let a quantity of wheat, as a bushel, be put in at a time. Let the wheat be well stirred, and let all the lighter grains which come to the top be skimmed carefully off, and thrown aside as useless. The wheat should remain from five to ten minutes, but never more than ten minutes, in the pickle.—The successive portions of wheat thus pickled are to be allowed to drain a little, and then to be laid upon the barn-floor in layers, hot lime being at the same time sifted upon each layer. The purpose of spreading the lime is to dry the grain, which should then be carried immediately to the fields and sown. The lime used should be quite hot, and for this purpose it should be slacked at the time. Although the immediate purpose served by the application of lime is drying the grain, it may be believed that it also assists the action of the brine in removing the tendency to the disease.

A very strong pickle of salt dissolved in water may be used instead of urine; but salt-brine is not quite so secure a means of preventing the disease as urine; and the latter, therefore, ought to be preferred.

The wheat, after being pickled, must not remain long unsown, otherwise its vegetative powers may be injured or destroyed. No more should be pickled at a time than can be then sown. When, from any cause, as from rain intervening, it is not practicable to sow the wheat for a day or two, it should be spread thinly upon the floor, but never kept in sacks, in which it would soon ferment.

The wheat, when pickled, then, is to be carried directly to the field. It may be sown, either by the hand or by the broadcast sowing-machine, in the manner already described, or in rows by the drill-machine.

When it is sown in drills, the usual distance between the rows is from 9 to 12 inches; but it is conceived that the larger intervals are the better, and that they may, in most cases, be with advantage more than 12 inches.

The quantity of seeds usually sown is from two to three bushels to the acre. In the case of summer-fallow, the quantity need not exceed two bushels to the acre. When the sowing takes place in spring, the quantity may be extended to three bushels, but rather less than more.

When the seeds are sown by the drill-machine, a single or a double turn of the harrows will suffice. When they are sown broadcast, the land must receive several harrowings, but no more than are sufficient to cover the seeds—it being better in the case of wheat that there be a certain roughness of clod. A double turn along the ridge, a double turn across, and again a single turn along, will in almost every case suffice; and often less, namely, a double turn along, a single turn across, and a single turn along; but many farmers prefer finishing with a turn across.

No sooner is the process of harrowing executed than the land is to be water-furrowed in the following manner: The common plow, with one horse, is to pass once along each water-furrow, and then along the water-furrows of the head-lands, and to draw further open furrows in such hollows of the field as water might stagnate in. A person is then to follow with a spade, to clear out the water-furrow of the headlands to the necessary depth; to make channels through the headlands to the ditch, where necessary; to clear out the cross-furrows in the hollows, so as to allow the water to run; and to open up the intersections of the water-furrows of the ridges with these cross-furrows, and the water-furrows of the headlands.

The best period of sowing, it has been said, is from about the middle to the end of Sep-
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tember. The early part of October, however, is well suited to the sowing of wheat, and it may be continued till the middle of November, or later.

Wheat may be advantageously sown after potatoes. This crop is generally removed from the ground early in October, which admits of the wheat being sown before winter. In the case of this crop, the land being first harrowed, it is then formed into ridges, and the wheat is sown upon these, precisely as in the case of summer-fallow.

Every one must have observed how much wheat is liable to be "thrown out" in the spring, resulting in serious diminution of the crop. To guard against that, a writer in the *Farmer's Magazine* says he sowed his wheat by a plow drawn by two horses, five or six inches deep, and covered it with the neat furrow at ten or eleven inches breadth. He never harrowed it after sowing, and "horse's foot never trod on it." The wheat, he says, was covered by the deepest part of the furrow, and, to the surprise of himself and neighbors, the wheat thus sown and covered came up sooner than wheat sown on the same day, in the common broadcast way, on some adjacent land of similar quality, treated in other respects in the same manner as to plowing, liming, &c. through the summer. He goes on to remark:

As it is well known that wheat prefers a stiff soil to a loose one, I attributed the rapidity of growth to the stiff soil suiting the wheat more than the loose broadcast; for it not only came sooner, but kept the start it got, and now, after heavy rains and frost, looks better—the ground not being run together and battered with the winter rains, as the broadcast wheat is; and, having examined it during severe frost, I found that the roots of the plant had not suffered by it, while that sown broadcast had. The roots of the drilled wheat were actually considerably longer than the broadcast sown the same day; I have, therefore, little doubt that I shall most probably have a standing crop of wheat in place of a lodged one, or at least not so soon lodged, and that I shall escape the root falling from the spring frost. It is well known that in England an instrument called the presser is used in light soils to firm the ground, and also that sheep are often pastured or driven over it for that purpose. Another advantage of this plan of sowing is, that all trouble and time of harrowing is saved; and, if sudden rain comes on, the sowing is stopped at once, without the risk of being half harrowed; the ground is also much more cloddy in winter—thus affording shelter to the young plants, and an excellent cover for grass seeds, if sown in a dry, bleak, frosty morning, without harrowing, by the decomposition and falling down or mouldering of the ground, as the day advances, and the effects of the sun are felt on it. My experiment extended over two fields, comprehending about twenty acres; and I harrowed part of the one field, and I think the part unharrowed looks better than the harrowed; however, time will show which has succeeded best. I was thrice stopped by rain during the sowing, but, as I said above, felt no inconvenience from it.

In apparent corroboration of the above as to the object of plowing in wheat, Mr. MILLS, five miles out on the Jamaica road from Williamsburgh on the East River, whose farm is the one to which we have alluded, says he *plowed in, late in October*, the lot of Mediterranean wheat last referred to, and which, it was judged, would yield thirty bushels after a crop of a fraction over 200 of potatoes.

This wheat, sowed late in October, and plowed in, did not come up to show itself until the spring. We should judge it to be very nearly five feet high over the entire field.

Proposing to publish in our next the prize essay of Professor HENSLow on the diseases of wheat, we must draw this dissertation to a close by quoting from Doctor UNDERHILL, President of the Westchester Agricultural Society, a practical and scientific agriculturist, one who so far pays respect to the profession as to believe that it loses nothing either of profit or dignity, by acting on the persuasion that it, too, is an art that has its principles to be consulted, its right and its wrong way of proceeding, and requires and will reward investigation and study. We would sooner learn the right way, finally, through the errors of such men, than to go right, blindfolded and by chance; though we apprehend no error in this case; on the contrary, it agrees, for the most part, with what we should have written, though not as well, from our own observation and the best authorities.

We find the letter in the ponderous work of the United States Government, like (not to stray from our subject) good wheat in a mass of chaff.

"Land that has been well manured in a previously cultivated crop, such as corn and potatoes, is, with proper plowing and harrowing, very suitable for winter wheat. It is always best that the manure should have been applied in the previous crop, particularly if it is rank or recently formed; or your wheat will produce too much straw, be weak and fall down. There are a few exceptions to this rule. Bone dust, oily fish, street manure, &c. have often been applied at the time of sowing, to secure a good crop. A sandy loam, with a good supply of calcareous earth or lime, forms the best soil for wheat—a certain amount of sand or silex, clay, and lime, being essential to secure a good crop." When I say that the land should be thoroughly plowed three or four times, and harrowed as often, I am fully aware of what is the usual practice, and also of the loss sustained by only one plowing and two harrowings. I do not apply these observations to land just cleared from the forest, (though then the more and better the plowing, the larger the crop,) or the prairie soil just turned over, but to the land in all the old States, and all kinds long under cultivation. The object in plowing the ground so much, is to turn under more completely atmospheric air, which consists of nitrogen, oxygen, and carbonic acid, a thorough mechanical mixture of which with the soil will insure a great increase of crop; it also acts as a manure. The thorough pulverizing of the soil, so as to make it fine, is secured in this way, which renders it so much better for the fine roots in the early growth of the plant to get well rooted before winter sets in, thus securing it from being winter-killed. This also enables you to pasture your sheep and young cattle upon it in the fore part of November without any fear of pulling it up. They will secure it from the Hessian fly by eating off the larvae.

"It is also very important to prepare the seed properly; you should have the most plump and clean seed that can be obtained. Six shillings or a dollar more per bushel for the best of seed is no consideration, when the advantages are taken into the account. In a barrel or half hoghead make a brine that will bear an egg, from the old salt taken from your meat and fish casks; or, if you have not saved this, ordinary fine or coarse salt, the former dissolving much the soonest, and is generally preferred for that reason. Put in one, two, or three bushels of wheat, and mix well with the brine, and skim off all the chaff and other foul seed and light wheat that rises to the top. There should be brine enough to cover the wheat three inches deep. Stir up the wheat with a stick occasionally, and let it remain in the brine three or four hours. Some persons let it remain all night; but I think there is some danger of swelling the grain and acting upon the farina too much by leaving it so long in the brine, and there is no real necessity for it. Draw off the brine into another cask, and lay the wheat on an oblique surface, so that the brine may draw off; then to every bushel of wheat add three or four quarts of fine air-slaked lime, and rake and shovel it through every part, so that every grain is coated with the lime, and the seed is much separated as possible from each other. (Some good farmers use more lime than the above.) If you have not lime, and cannot readily obtain it, use unleached wood ashes instead. You must measure your wheat before you prepare it, or you will likely, when you sow it, put less seed in than is proper. You will also find it difficult, from the increased bulk to hold enough each time in the hand. It is, therefore, better to sow twice, and at right angles; that is, take rather less than usual in the hand, and when you have gone over the field, begin and sow it over again in the same direction, (across the first sowing.) You will thus have it more even, and secure sufficient seed, which is rarely the case. When you have taken pains to prepare your land well, use plenty of good seed—a virtue rarely practiced in this part of the world. The object gained by the above preparation of the seed is, first, you destroy all the smut, which is a parasitical plant placed on the fuzzy end of the grain; also all the eggs of insects, that frequently may be seen with a glass on the same part of the grain. The salt and lime also act as a manure to stimulate the germ of the young plant, so as greatly to invigorate it in the early stage of its growth. Yours, truly, R. T. UNDERHILL, M. D."

* Mr. Townsend, to whose farm and good husbandry we have before alluded, pointed out a portion of his old-field where the crop was very manifestly the best in the field, heavy as it all was, and observed that he had spread on that part 100 bushels of lime to the acre; and he, without perhaps having ever read a word about the action of lime, called our attention emphatically to see *how well it stood up!*

In another field where a load of stable manure had been dropped, although afterward scraped up and carried off, the oats had fallen, or "lugged," and smothered the grass, because the straw wanted the quality of *strength*, which it is the province and property of lime to impart, by means of the silex or flint with which it invests it. These are facts which all young farmers will know beforehand, without waiting for experience, when our country comes to abound in such schools as now abound in Germany for *teaching the principles of Agriculture*. "The fruit of these excellent establishments," says a modern traveler, "has been chiefly to lay a foundation in the minds of a large class of the people, that disposes them to industrious activity, and has prepared highly useful agents for the management of farms and manufacturing establishments. Few young men would now think of offering themselves for the place of *botliff* or *farming agents*, without possessing testimonials of their fitness from some of these colleges. The scientific explanations which any inquiring traveler can receive at the hands of almost any young man so occupied on large estates respecting the soil, climate, manners, &c. of the locality, will often excite surprise, and no less so the calculations by which they judge whether improved processes ought to be adopted, and where additional outlay or increased economy is the more judicious plan to follow." We would almost agree to live on *pumpnickel* to have the same said for our country.

FOREIGN CATTLE.

UNDER this head, there are some timely and very just remarks, in the last number of the *American Agriculturist*, which we would copy if we had room. We have no false pride or narrower or more ignoble motive which would prevent us at any time from copying from other agricultural papers what may be deemed useful and appropriate. On the contrary, we often find in them such things, better expressed than we could hope to present them; but it seems most proper that we should generally avoid the path in which we may suppose they are traveling, so that our readers, who we sincerely hope are also readers of our cotemporaries, may have the greater variety of dishes spread before them.

We had laid aside some items from the last *Cultivator*, for which we find we have not room. We have been wanting to publish the Report by Mr. Phinney on the importation of cattle by the Massachusetts Agricultural Society, with some remarks; and among others the expression of our conviction that as good *Devons* might have been had, at one-third the price they cost, of Mr. PATTERSON, near Sykesville, Maryland, who would sooner give away a superior, than sell an inferior animal, as a breeder.

It was from his stock, produce of his latest importations, that Mr. LEWIS ALLEN procured, several years since, some choice yearlings, which must now be offering fine stock in the neighborhood of Buffalo. In what *spirit* they were bought, and whether they are likely to have been kept pure, and whether the enterprise deserves domestic encouragement, may be inferred from the fact that they were selected and taken all the way to Buffalo, under the vigilant personal care of the venerable father of the purchaser, who at three score and ten abates nothing of the zeal inherited by his stock—to whom may be applied the maxim in breeding, that “like begets like.”

Of Mr. RANDALL of New-Bedford, Mass. and from other gentlemen named in the *American Agriculturist*, it may be presumed that Ayrshires and other breeds may now be had equal to the imported stock from which they are descended, and probably at not more than one-third the price. Under these circumstances we are sure our readers will agree that when cattle, or other animals, of equal excellence and purity of blood, are to be had in the United States, the common interest of all dictates that they should have a preference, even at the same price, much more when they can be had for one-third.

This recurrence to foreign stock was proper and patriotic, until the home supply became adequate to the demand, and the guaranty of distinctness and purity of blood sufficient to warrant full confidence. But there all importation should cease, else is there to be no commencement of encouragement and reward to those who have been at the expense and, as it would now seem, great risk of supplying the country? There is no reason to doubt, that those who wish, may now be supplied, in our own country, with pure blood *Short-Horns*, *North Devon*, *Hereford* and *Ayrshire* cattle—with *Dishley* or *Bakewell*, *Merino*, *South-down*, *Saxony* and *Lincolnshire* sheep. The Ayrshires lately imported by Mr. JOHN COLT, Jr., and to be seen on his farm near Paterson, are very choice specimens of their breed, and cost about \$350 each at landing in this country.

In regard to *Devons*, so beautiful in themselves, so thrifty, so rich in milk, and so docile in the yoke—we are not so familiar with other herds—but, if we were in the way of betting, we would freely wager that there is not in all old England a herd superior, *if equal for the number*, (which is very large,) to that which grazes on the broad and fertile fields of Mr. Patterson. There have been Devons, however, advertised near Baltimore, picked up here and there in the way of trade, that may or may not have been altogether of the “*true grit*.”

Finally, we heartily concur with the Editor of the American Agriculturist in saying—

“Let us now sustain each other—at least until our domestic demand shall carry prices up to something like a compensating amount for the heavy capital already invested in our improved stock: or until the reduced cheapness on the other side the Atlantic shall be a sufficient reason for passing by animals and herds of equal excellence on this.”

RANDALL'S GEOLOGY.

INCENTIVES TO THE CULTIVATION OF THE SCIENCE OF GEOLOGY. DESIGNED FOR THE USE OF THE YOUNG. BY S. S. RANDALL, Deputy Superintendent of Common Schools of the State of New York. New-York: Greeley & McElrath.

WE can deem no apology necessary for appealing, again and again, to parents and to all men who have influence, political or social, to make it *their first care to watch over our common schools*, and to see that such books are placed in the hands, and such direction given to the minds of our youth, as will beget an early fondness for reading, and an eagerness to explore those fields of knowledge in which all acquisition must, more or less directly, contribute to their success in the business by which they are to gain their livelihood, and by which those who are destined for Agriculture may at the same time entitle themselves to rank with the cultivated men of other professions.

It gives us unfeigned delight whenever a new book falls in our way which seems calculated to lead to this result, by adapting natural sciences to the comprehension of the young, and, in that way, smoothing the otherwise rugged path over which they might have to travel in pursuit of entertaining and useful knowledge.

Of such a nature and tendency is the small volume, “INCENTIVES TO THE CULTIVATION OF THE SCIENCE OF GEOLOGY. DESIGNED FOR THE USE OF THE YOUNG: by S. S. RANDALL, Deputy Superintendent of Common Schools of the State of New-York,” which has been laid on our table by the Publishers, GREELEY & McELRATH.

To our own SILLIMAN (it is of *such* men a country has a right to be proud), and to LYELL, who has traveled much and recently in America, the scientific world is much indebted for the means of diffusing a knowledge of modern geological discoveries.

Its connection with Agriculture—lying, as it does, at the foundation of agricultural science—is too obvious to need any illustration. Enough to repeat what has been said in general terms, that

“There is this, therefore, to recommend geology, that it excites a distinct interest in the external characters of a country or district, independent of the beauties, or ruggedness, or sublimity of its aspect, or of its geographical peculiarities, and endeavors to trace a connection between its *exterior* features and *interior* structure; and in these, its simplest details, it bears upon Agriculture, and ultimately upon all those numerous arts in which mineral substances are concerned. The farmer should be a geologist, and so should the architect: the miner and the mineralogist *must* be so. But this is, as it were, the mere title of the volume; for when we come more narrowly to peruse its contents, we do indeed find it “as a book wherein man may read strange matters.” It is full of relics, so extraordinary as to arrest the

attention of the most superficial inquirer, and to awaken the deepest interest in the philosophic observer: it is thronged with records of strange and mighty changes and convulsions; of revolutions in climate, and in the genera and species of the organic creation; it carries the mind back to a period indefinitely remote, when our present continents were at the bottom of the ocean, from which they seem to have been elevated sometimes by the slowest degrees, and at others by a more rapid and violent cause, and when both sea and land were tenanted by distinct tribes and races of extraordinary animals and vegetables: it shows that everything as we *now* find it has been gradually and successively developed, as it were, and that man himself has appeared but late upon this singular stage."

MR. RANDALL says—and therein has displayed again his good judgment—that "the purely scientific details and technical language, with which the practical geologist is familiar, have been, as far as possible, purposely avoided, in order to disencumber the general survey of the ample field thus opened to view of those perplexities and embarrassments which their introduction in the elementary stage of our inquiries could scarcely fail to induce."

ENTOMOLOGY—THE SPIDER.

We have already and repeatedly set forth the light in which we regard the study of natural history, in all its branches, and the importance of making works illustrative of it a portion of the *course of study in all our schools*. Boys might be made so fond of it as to regard it as a pastime, and almost to relinquish for it their play-time and vacations.

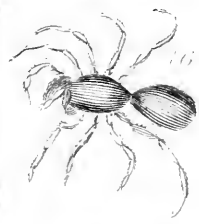
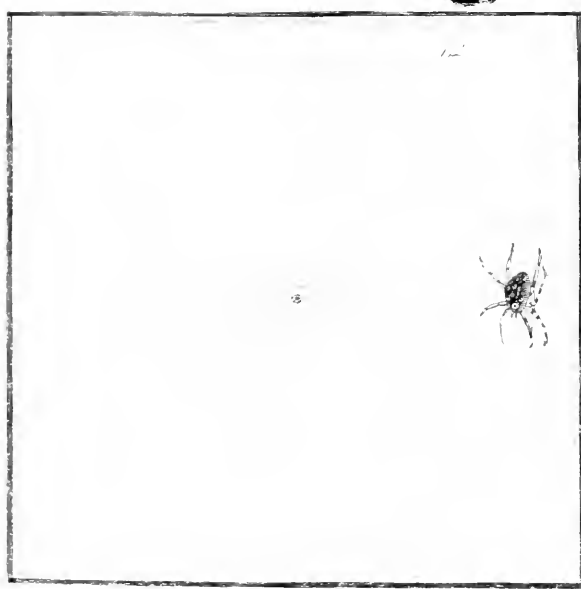
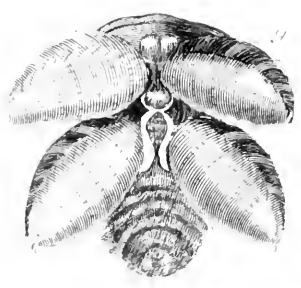
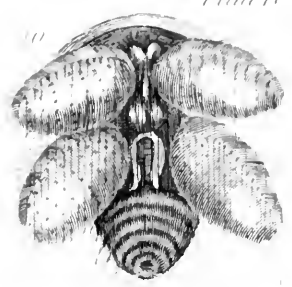
However difficult, says a charming writer, it may be entirely to comprehend the phenomena we daily witness, *everything in nature is full of instruction*.

"Thus, the humblest flower of the field—although, to one whose curiosity has not been excited, and whose understanding has, therefore, remained uninformed, it may appear worthless and contemptible—is valuable to the botanist, not only with regard to its place in the arrangement of this portion of the Creator's works, but as it leads his mind forward to the consideration of those beautiful provisions for the support of vegetable life, which it is the part of the physiologist to study and to admire.

"This train of reasoning is peculiarly applicable to the economy of insects. They constitute a very large and interesting part of the animal kingdom. They are everywhere about us. The spider weaves his curious web in our houses; the caterpillar constructs his silken cell in our gardens; the wasp that hovers over our food, has a nest not far removed from us, which she has assisted to build with the nicest art; the beetle that crawls across our path is also an ingenious and laborious mechanic, and has some curious instincts to exhibit to those who will feel an interest in watching his movements; and the moth that eats into our clothes has something to plead for our pity, for he came, like us, naked into the world, and he has destroyed our garments, not in malice or wantonness, but that he may clothe himself with the same wool which we have stripped from the sheep. An observation of the habits of these little creatures is full of valuable lessons, which the abundance of the examples has no tendency to diminish. The more such observations are multiplied, the more are we led forward to the freshest and the most delightful parts of knowledge—the more do we learn to estimate rightly the extraordinary provisions and most abundant resources of a creative Providence—and the better do we appreciate our own relations with all the infinite varieties of Nature, and our dependence, in common with the ephemeron that flutters its little hour in the summer sun, upon that Being in whose scheme of existence the humblest as well as the highest creature has its destined purposes."

In these views we recur again and for the last time, for the amusement of our readers, to the "PASTORAL LIFE OF THE ANCIENTS," for the following observations on the works of a predatory insect, whose habits and cunning contrivances are among the first lessons which Nature teaches us, without books, and almost as soon as she opens our faculties of observation:

Of spiders there are many species; most of them extend their labors no farther than merely to make a web to ensnare and detain their food. But others are known to go beyond this, and spin a bag in the form of a cocoon, for the protection of their eggs, nearly similar to that of the silk-worm.





Spiders, according to the dissections of M. Treviranus, have four principal vessels, two larger and two smaller, with a number of minute ones at their base. Several small tubes branch toward the reservoirs, for carrying to them, no doubt, a supply of the secreted material. . . . From these little flasks or bags of gum, situated near the apex of the abdomen, and not at the mouth as in caterpillars, a tube originates, and terminates in the external spinnerets, which may be seen by the naked eye in the form of five little teats surrounded by a small circle, as represented in Fig. 3, Plate IV.; this figure shows the garden spider (*Epeira diadema*) suspended by a thread proceeding from its spinneret. . . . On looking with a strong magnifying glass, at the teat-shaped spinnerets of a spider, we perceive them studded with regular rows of minute bristle-like points, about a thousand to each teat, making in all from five to six thousand. These are minute tubes which we may appropriately term *spinnerules*, as each is connected with the internal reservoirs, and emits a thread of inconceivable fineness. Fig. 9 represents this wonderful apparatus as it appears in the microscope.

We do not recollect that naturalists have ventured to assign any cause for this very remarkable multiplicity of the spinnerules of spiders, so different from the simple spinneret of caterpillars. To us it appears an admirable provision for their mode of life. Caterpillars neither require such strong materials, nor that their thread should dry as quickly. It is well known in our manufactures, particularly in rope-spinning, that in cords of equal thickness, those which are composed of many smaller ones united are stronger than those spun at once. In the instance of the spider's thread, this principle must hold still more strikingly, inasmuch as it is composed of fluid materials that require to be dried rapidly, and this drying must be greatly facilitated by exposing so many to the air separately before their union, which is effected at about the tenth of an inch from the spinnerets. In Fig 10, Plate IV, each of the threads shown is represented to contain one hundred minute threads, the whole forming only one of the spider's common threads. In the figure the threads are, of course, greatly magnified, so that, for the small space represented, the lines are shown as parallel.

Remmür relates that he has often counted as many as seventy or eighty fibres through a microscope, and perceived that there were yet infinitely more than he could reckon; so that he believed himself to be far within the limit of truth in computing that the tip of *each* of the five papille furnished 1,000 separate fibres: thus supposing that one slender filament of a spider's web is made up of 5,000 fibres!

Leeuwenhoeck, in one of his extraordinary microscopical observations on a young spider, not bigger than a grain of sand, upon enumerating the threadlets in one of its threads, calculated that it would require *four millions* of them to be as thick as a hair of his head!

Another important advantage derived by the spider from the multiplicity of its threadlets is, that the thread affords a much more secure attachment to a wall, a branch of a tree, or any other object, than if it were simple: for, upon pressing the spinneret against the object, as spiders always do when they fix a thread, the spinnerules are extended over an area of some diameter, from every hair's breadth of which a strand, as rope-makers term it, is extended to compound the main cord. Fig. 11, Plate IV, exhibits, magnified, this ingenious contrivance. Those who may be curious to examine it, will see it best when the line is attached to any black object, for the threads, being whitish, are, in otherwise, not so easily perceived.

SHOOTING OF THE LINES.—It has long been considered a curious though difficult investigation, to determine in what manner spiders, seeing that they are destitute of wings, transport themselves from tree to tree, across brooks, and frequently through the air itself, without any apparent starting point. On looking into the authors who have treated upon this subject, it is surprising how little there is to be met with that is new, even in the most recent.

Here the author gives the theories of various writers, which, we agree with him, seem to be neither reasonable nor satisfactory—some of them proved to be unfounded and impracticable; and finally he inclines to that of Mr. BLACKWALL, who says:

Having procured a small branched twig, I fixed it upright in an earthen vessel containing water, its base being immersed in the liquid, and upon it I placed several of the spiders which produce gossamer. Whenever the insects thus circumstanced were exposed to a current of air, either naturally or artificially produced, they directly turned the thorax toward the quarter whence it came, even when it was so slight as scarcely to be perceptible, and elevating the abdomen, they emitted from their spinners a small portion of glutinous matter, which was instantly carried out to a line, consisting of four finer ones, with a velocity equal, or nearly so, to that with which the air moved, as was apparent from observations made on the motion of detached lines similarly exposed. The spiders, in the next place, carefully ascertained whether their lines had become firmly attached to any object or not, by pulling at them with the front pair of legs; and if the result was satisfactory, after tightening them sufficiently, they made them pass to the twig; then discharging from their spinners, which they applied to the spot where they stood, a little more of their liquid gum, and committing themselves to these bridges of their own constructing, they

passed over them in safety, drawing a second line after them, as a security in case the first gave way, and so effected their escape."

NESTS, WEBS, AND NETS OF SPIDERS.—"Of all sorts of insects," says Mr. Rennie, "none have afforded me more diversissement than the *venatores* (hunters), which are a sort of *lupi* (wolves) that have their dens in rugged walls and crevices of our houses; a small brown and delicately spotted kind of spiders, whose hinder legs are longer than the rest. Such I did frequently observe at Rome, which, espying a fly at three or four yards distance, upon the balcony where I stood, would not make directly to her, but crawl under the rail, till being arrived to the antipodes, it would steal up, seldom missing its aim; but if it chanced to want anything of being perfectly opposite, would, at first peep, immediately slide down again—till taking better notice, it would come the next time exactly upon the fly's back; but if this happened not to be within a competent leap, then would this insect move so softly, as the very shadow of the guanoon seemed not to be more imperceptible, unless the fly moved; and then would the spider move also in the same proportion, keeping that just time with her motion, as if the same soul had animated both these little bodies; and whether it were forward, backward, or to either side, without at all turning her body, like a well-managed horse; but if the capricious fly took wing and pitched upon another place behind our huntress, then would the spider whirl its body so nimbly about as nothing could be imagined more swift; by which means she always kept the head toward her prey, though, to appearance, as immovable as if it had been a nail driven into the wood, till by that indiscernible progress (being arrived within the sphere of her reach) she made a fatal leap, swift as lightning, upon the fly, catching him in the pole, where she never quitted hold till her belly was full, and then carried the remainder home."

One feels a little skeptical, however, when he adds,

"I have beheld them instructing their young ones how to hunt, which they would sometimes discipline for not well observing; but when any of the old ones did (as sometimes) miss a leap, they would run out of the field and hide themselves in their crannies, as ashamed, and haply not to be seen abroad for four or five hours after; for so long have I watched the nature of this strange insect, the contemplation of whose so wonderful sagacity and address has amazed me; nor do I find in any chase whatsoever more cunning and stratagem observed. I have found some of these spiders in my garden, when the weather toward spring, was very hot, but they are not so eager in hunting as in Italy*."

We have only to add to this lively narrative, that the hunting-spider, when he leaps, takes good care to provide against accidental falls by always swinging himself from a good strong cable of silk, as Swammerdam correctly states,† and which anybody may recognize as one of the small hunters (*Salticus scenicus*), known by its back striped with black and white like a zebra.

The geometric or net-working spider (see Fig. 12) are as well known as any of the preceding; almost every bush and tree in our gardens and hedge-rows having one or more of their nests stretched out in a vertical position between adjacent branches. The common garden spider (*Epeira diadema*), and the long-bodied spider (*Tetragnatha extensa*), are the best known of this order.

"The chief care of a spider of this sort," says Mr. Rennie, "is, to form a cable of sufficient strength to bear the net she means to hang upon it; and after throwing out a floating line as above described, when it catches properly, she doubles and redoubles it with additional threads. On trying its strength she is not contented with the test of pulling it with her legs, but drops herself down several feet from various points of it, as we have often seen, swinging and bobbing with the whole weight of her body. She proceeds in a similar manner with the rest of the frame of her wheel-shaped net; and it may be remarked that some of the ends of these lines are not simple, but in form of a Y, giving her the additional security of two attachments instead of one."

In constructing the body of the nest, the most remarkable circumstance is the using of her limbs as a measure, to regulate the distances of her radii or wheel-spokes (see Fig. 12, Plate IV. which presents the geometric net of the "*Epeira diadema*"), and the circular meshes interwoven into them. These are consequently always proportional to the size of the spider. She often takes up her station in the center, but not always, though it is so said by inaccurate writers; but she as frequently lurks in a little chamber constructed under a leaf or other shelter at the corner of her web, ready to dart down upon whatever prey may be entangled in her net. The center of the net is said also to be composed of more viscid materials than its suspensory lines—a circumstance alleged to be proved by the former appearing under the microscope studded with globules of gum.‡ "We have not been able," says Mr. Rennie, "to verify this distinction, having seen the suspensory lines as often studded in this manner as those in the center."

At the commencement of the last century, a method was discovered in France by Monsieur Bon, of procuring silk from spiders' bags, and its use was attempted in the manufacture of several articles. Mr. Bon has, however, noticed only two kinds of silk-making spiders, and these he has distinguished from each other as having either long or short legs, the last variety producing the finest quality of raw silk. According to this ingenious observer,

* Evelyn's Travels in Italy.
(184)

† Book of Nature, part i. p. 24.

‡ Kirby and Spence, Intr. i. 419.

the silk formed by these insects is equally beautiful, strong, and glossy with that formed by the silk-worm.

After a long and patient examination M. Reaumur stated the following objections to Mr. Bon's plan for raising spider-silk, which have ever since been regarded as insurmountable:

1. The natural fierceness of spiders renders them unfit to be bred together. On distributing four or five thousand of these insects into cells or companies of from fifty to one or two hundred, it was found that the larger spiders quickly *killed and ate the smaller*, so that in a short space of time the cells were depopulated, scarcely more than one or two being found in each cell.

2. The silk of the spider is inferior to that of the silk-worm both in lustre and strength; and produces less in proportion, than can be made available for the purposes of the manufacture. The filament of the spider's bag can support a weight of only thirty-six grains, while that of the silk-worm will sustain a weight of one hundred and fifty grains. Thus four or five threads of the spider must be brought together to equal one thread of the silk-worm, and as it is impossible that these should be applied so accurately over each other as not to leave little vacant spaces between them, the light is not equally reflected, and the lustre of the material is consequently inferior to that in which a solid thread is used.

3. A great disadvantage of the spider's silk is, that it cannot be wound off the ball like that of the silk-worm, but must necessarily be carded. By this latter process, its evenness, which contributes so materially to its lustre, is destroyed.

The ferociousness and pugnacity of the spiders are not exaggerated; they fight like furies. Their voracity, too, is almost incredible, and it is very questionable whether the mere collection of flies sufficient to feed a large number of the spiders would not involve an amount of expense fatal to the project as a lucrative undertaking. The strength of the spiders' filament is, if anything, overstated by Reaumur. Deficiency of lustre arising from the carding of the filaments is common to the spider-fabric and to spun silk; this objection would, perhaps, not be of very great weight but for the decisive calculation by which Reaumur showed the comparative amount of production between the spider and the silk-worm.

The largest cocoons weigh four, and the smaller three grains each; spider-bags do not weigh above one grain each; and, after being cleared of their dust, have lost two-thirds of this weight; therefore the *work of twelve spiders* equals that of *only one silk-worm*; and a pound of spider-silk would require for its production 27,643 insects. But as the bags are wholly the work of the females, who spin them as a deposit for their eggs, it follows that 55,296 spiders must be reared to yield one pound of silk: yet this will be obtained only from the best spiders—those large ones ordinarily seen in gardens, &c. yielding not more than a twelfth part of the silk of the others. The work of 280 of these would therefore not yield more silk than the produce of one industrious silk-worm, and 663,552 of them would furnish only one pound of silk!

THE INGENUITY OF SPIDERS.—Mr. Thomas Ewbank of New-York, in a letter to the Editor of the Journal of the Franklin Institute, bearing date September 20th, 1842, gives us the following interesting description of the ingenuity of the spider:

"The resources of the lower animals have often excited admiration, and though no comprehensive and systematic series of observations have yet been made upon them, (?) the time is, I believe, not distant, when the task will be undertaken—perhaps within the next century. But whenever and by whomsoever accomplished, the mechanism of animals will then form the subject of one of the most interesting and *useful* volumes in the archives of man.

"Among insects, spiders have repeatedly been observed to modify and change their contrivances for *ensnaring their prey*. Those that live in fields and gardens often fabricate their nets or webs vertically. This sometimes occurs in locations where there is no object sufficiently near to which the lower edge or extremity of the web can properly be braced; and unless this be done, light puffs or breezes of wind are apt to blow it into an entangled mass. Instead of being spread out, like the sail of a ship, to the wind, it would become clewed over the upper line, or edge, like a sail when furled up. Now how would a human engineer act under similar circumstances? But ere the reader begins to reflect, (?) he should bear in mind that it would not do to brace the web by running rigging from it to some *fixed* or immovable object below—by no means; for were this done, it could not yield to impulses of wind: the rigging would be snapped by the first blast, and the whole structure probably destroyed.

"Whatever contrivances human sagacity might suggest, they could hardly excel those which these despised engineers sometimes adopt. Having formed a web, under circumstances similar to those to which we have referred, a spider has been known to descend from it to the ground by means of a thread spun for the purpose, and after selecting a minute pebble, or piece of stone, has coiled the end of the thread round it. Having done this, the ingenious artist ascended, and fixing himself on the lower part of the web, hoisted up the pebble until it swung several inches clear of the ground. The cord to which the weight was suspended was then secured by additional ones, running from it to different parts of the web, which thus acquired the requisite tension, and was allowed, at the same time, to yield to sudden puffs of wind without danger of being rent asunder.

"A similar instance came under my notice a few days ago. A large spider had constructed his web, in nearly a vertical position, about six feet from the ground, in a corner of my yard. The upper edge was formed by a strong thread, secured at one end to a vine-leaf, and the other to a

clothes line. One part of the lower edge was attached to a Penyan sun flower, and another to a trellis fence, four or five feet distant. Between these there was no object nearer than the ground, to which an additional brace line could be carried; but two threads, a foot asunder, descended from this part of the web, and, eight or ten inches below it, were united at a point. From this point, a single line four or five inches long, was suspended, and to its lower extremity was the weight, a *living one*, viz. a worm, *three inches long*, and *one-eighth of an inch thick*. The cord was fastened around the middle of the victim's body and as no object was within reach, all its writhings and efforts to escape were fruitless. Its weight answered the same purpose as a piece of inanimate matter, while its sufferings seemed not in the least to disturb the unconcerned murderer, who lay waiting for his prey above.

"Whether the owner of the web found it a more easy task to capture this unlucky worm and raise it, than to elevate a stone of the same weight, may be questioned. (?) Perhaps in seeking for the latter, the former tell in his way, and was seized as the first suitable object that came to hand—like the human tyrant, (Domitian) who, to show his skill in archery, planted his arrows in the heads of men or cattle, in the absence of other targets. It may be, however, that a piece of stone, earth, or wood, of a suitable weight, was not in the vicinity of the web.

To observe the effect of this weight, I separated, with a pair of scissors, the thread by which it was suspended, and instantly the web sunk to half its previous dimensions—the lower part became loose, and with the slightest current kept shaking like a sail shivering in the wind. A fresh weight was not supplied by the next morning; but instead of it two long brace lines extended from the lower part of the web to two vine tendrils, a considerable distance off. These I cut away to see what device would be next adopted, but on going to examine it the following day, I found the clothes-line removed, and with it all relics of the insect's labors had disappeared."

MASON-SPIDERS.—A no less wonderful structure is composed by a sort of spiders, natives of the tropics and the south of Europe, which have been justly called mason-spiders by M. Latreille. One of these (*Mygale nidulans*, WALCKEN.), found in the West Indies,

"digs a hole in the earth obliquely downward, about three inches in length, and one in diameter. This cavity she lines with a tough thick web, which, when taken out, resembles a leathern purse; but what is most curious, this house has a door with hinges, like the operculum of some sea-shells, and herself and family, who tenant this nest, open and shut the door whenever they pass and re-pass. This history was told me," says Darwin, "and the nest, with its door, shown me by the late Dr. Butt, of Bath, who was some years physician in Jamaica."^{*}

"The nest of a mason-spider, similar to this," says Mr. Rennie, "has been obligingly put into our hands by Mr. Riddle of Blackheath. It came from the West Indies, and is probably that of Latreille's clay-kneader (*Mygale cratiens*), and one of the smallest of the genus. We have since seen a pair of these spiders in possession of Mr. William Mello, of Blackheath. The nest is composed of very hard argillaceous clay, deeply tinged with brown oxide of iron. It is in form of a tube, about one inch in diameter, between six and seven inches long, and slightly bent toward the lower extremity—appearing to have been mined into the clay rather than built. The interior of the tube is lined with a *uniform tapestry of silken web, of an orange-white color*, with a texture intermediate between India paper and very fine glove leather. But the most wonderful part of this nest is its entrance, which we look upon as the perfection of insect architecture. A circular door, about the size of a crown piece, slightly concave on the outside and convex within, is formed of more than a dozen layers of the same web which lines the interior, closely laid upon one another, and shaped so that the inner layers are the broadest, the outer being gradually less in diameter, except toward the hinge, which is about an inch long; and in consequence of all the layers being united there, and prolonged into the tube, it becomes the thickest and strongest part of the structure. The elasticity of the materials, also, gives to this hinge the remarkable peculiarity of acting like a spring, and shutting the door of the nest spontaneously. It is, besides, made to fit so accurately to the aperture, which is composed of similar concentric layers of web, that it is almost impossible to distinguish the joining by the most careful inspection. To gratify curiosity, the door has been opened and shut hundreds of times, without in the least destroying the power of the spring. When the door is shut, it resembles some of the lichens (*Leccidea*), or the leathery fungi, such as *Polyporus versicolor* (MICHELL) or, nearer still, the upper valve of a young oyster-shell. The door of the nest, the only part seen above ground, being of a blackish-brown color, it must be very difficult to discover."

Another mason-spider (*Mygale carnearia*, LATR.), found in the south of France, usually selects for her nest a place bare of grass, sloping in such a manner as to carry off the water, and of a firm soil, without rocks or small stones. She digs a gallery a foot or two in depth, and of a diameter (equal throughout) sufficient to admit of her easily passing. She lines this with a *tapestry of silk glued to the walls*. The door, which is circular, is constructed of many layers of earth kneaded, and bound together with *silk*. Externally, it is flat and rough, corresponding to the earth around the entrance, for the purpose, no doubt, of concealment; on the inside it is convex, and *tapestried thickly with a web of fine silk*. The threads of this door-tapestry are prolonged, and strongly attached to the upper side of the entrance, forming an excellent hinge, which, when pushed open by the spider, shuts again by its own weight, without the aid of spring hinges. When the spider is at home, and her door forcibly opened by an intruder, she pulls it strongly inward, and even where half-opened often snatches it out of the hand; but, when she is foiled in this, she retreats to the bottom of her den, as her last resource.† The nest of this spider (the mason-spider) is represented in Plate IV. Fig. 14, and shows the nest shut. Fig. 15 represents it open. Fig. 16, the spider (*Mygale ex-*

* Darwin's Zoonomia, i. 253, 8vo. ed.

† Mem. Soc. d'Hist. Nat. de Paris, An. vii.

mentaria). Fig. 17, the eyes magnified. Figures 18 and 19, parts of the foot and claw magnified. Rossi ascertained that the female of an allied species (*Mygale savagesii*, Latr.), found in Corsica, lived in one of these nests, with a numerous posterity. He destroyed one of the doors to observe whether a new one would be made, which it was; but it was fixed immovably, without a hinge; the spider, no doubt, fortifying herself in this manner till she thought she might reopen it without danger.*

"The Rev. Revett Shepherd has often noticed, in the fen ditches of Norfolk, a very large spider (the species not yet determined) which actually forms a *velf* for the purpose of obtaining its prey with more facility. Keeping its station upon a ball of weeds about three inches in diameter, probably held together by slight silken cords, it is waited along the surface of the water upon this floating island, which it quits the moment it sees a drowning insect. The booty thus seized it devours at leisure upon its raft, under which it retires when alarmed by any danger.†

In the spring of 1830, Mr. Rennie found a spider on some reeds in the Croydon Canal, which agreed in appearance with Mr. Shepherd's.

THE WATER-SPIDER.—We extract the following exquisitely beautiful and interesting fact in nature, *connected with diving operations*, from Rev. Mr. Kirby's *Bridgewater Treatise*:

"The Water-spider is one of the most remarkable upon whom that office (diving) is developing by her Creator. To this end, her instinct instructs her to fabricate a kind of *diving-bell* in the bosom of that element. She usually selects still waters for this purpose. Her house is an *oval cocoon*, filled with air, and lined with *silk*, from which threads issue in every direction, and are fastened to the surrounding plants; in this cocoon, which is open below, she watches for her prey, and even appears to pass the winter, when she closes the opening. It is most commonly, yet not always, entirely under water; but its inhabitant has filled it with air for her respiration, which enables her to live in it. She conveys the air to it in the following manner: she usually swims upon her back, when her abdomen is enveloped in a bubble of air, and appears like a globe of quicksilver; with this she enters her cocoon, and, displacing an equal mass of water, again ascends for a second lading, till she has sufficiently filled her house with it, so as to expel all the water.

"The males construct similar habitations by the same manœuvres. How these little animals can envelop their abdomen with an air-bubble, and retain it till they enter their cells, is still one of Nature's mysteries that have not been explained.

"We, however, cannot help admiring and adoring the wisdom, power, and goodness manifested in this singular provision, enabling an animal that breathes the atmospheric air to fill her house with it under water, and which has instructed her in a secret art, *by which she can clothe part of her body with air as a garment*, and which she can put off when it answers her purpose.

"This is a kind of attraction and repulsion which mocks all our inquiries."

Thus it appears that by the successive descents of the little water-spider under the impulsion of its instinct, produce effects in its subaqueous pavilion equivalent to those produced in the diving-bell, or diving helmet, by the successive strokes of the condensing air-pump of scientific man!

In the language of the book of Psalms, this insect "**LAYETH THE BEAMS OF**" her "**CHAMBERS IN THE WATERS,**" and there secures her subaqueous chambers in the manner described.

* Mem. Soc. d'Hist. Nat. de Paris. An. vii. p. 125, and Laireille, Hist. Nat. Génér. viii. p. 163.

† Kirby and Spence, Intr. i. 425.

HOP CULTURE IN THE UNITED STATES.

INFORMATION WANTED.

WASHINGTON, Feb. 27, 1846.

My Dear Sir: A valued correspondent in Germany wishes the accompanying questions respecting the culture and trade of hops in our community. Pray, if you can, resolve me the within.

Most respectfully, yours,

FRANCIS MARKOE, JR.

To JOHN S. SKINNER, Esq.

1. Where hops are cultivated in the United States?
2. Which places are the superior situations?
3. Are there good commercial houses in that line, and which are the first?
4. Are there houses capable of giving such commercial intelligence about this trade, out of which one may be able to form a judgment? And, in case such a house could be found, would it be kind enough to make such a statement?
5. How much hops there are cultivated in the U. S. in good years?
6. What is the home consumption? the export, and where does it go to principally?
7. Request to give an intelligence about the last harvest?
8. What are the conditions for purchase and shipping?

Any other necessary and useful information will be thankfully accepted.

[The Editor of the FARMERS' LIBRARY, New-York, will feel much obliged to

any gentleman who would have the goodness to answer, or aid him in answering, the above queries.

According to that veritable document, the Census of the United States for 1840, the whole quantity of hops raised in the United States the previous year was 1,238,502 pounds. New-York gets credit for 447,250 pounds, being nearly double the amount of either one of the two next greatest hop-growers, to wit—Massachusetts, 254,795, and New-Hampshire, 243,425 pounds. But, strange to say, in her own returns of 1845 we find no mention whatever made of *hops*! while, according to her State returns, Massachusetts, in 1844, produced 365,130 pounds, valued at \$32,251; being less than 9 cents a pound—a low valuation, that surprises us. At an average of ten cents, the whole product of the United States in 1839 was but \$123,850 20.

Here, again, little Delaware is made to sing small as usual when she falls into the clutches of Uncle Sam's agents. She is put down for 746 pounds of hops and 52½ pounds of hemp and flax! Hops are now (July 14) selling in New-York for 18 cents per lb.

How easy for every family to have growing about their house and garden as many vines as would afford more than they could use for domestic purposes. What vine more beautiful—what growth more clean and fragrant to look at and to handle? Surely nobody in the country *buys any*! That would be almost as bad as buying apples or grapes.]

EDITORIAL CORRESPONDENCE.

SUBSOIL OF THE LONG-LEAF PINE LAND OF NORTH CAROLINA.

CONJECTURE AS TO THE CAUSE OF THE DISAPPEARANCE OF THAT TREE.

"You inquire the nature of the *subsoil* of our piney lands? It is various. In many places the pine lands are low and flat, or very level. Here there is no sand *visible*, yet it is sandy, and of a dark cast—often on a substratum of a dark, indurated sand, harder than slate stone. Such is most common nearer the sea-board, as you may remember, 10 to 40 miles north of Wilmington on the railroad. In the regions farther up, we have great levels of pine on low, wet lands, with only ten or twelve inches of yellow sand and soil on a substratum of clay. These are now, and will be in ages to come, the best farming lands of the country.

"The long-leaf does not grow in *swamps or muddy places*, though they do on flats and lands on the borders of such places. The pine which grows in the branches, mud and swamps, is of the *short-leaved* kind, with very little resinous matter, and of little worth, save the *very heart*, which is said to outlast even light-wood.

"Long-leaf pine and sand may be said to accompany each other in the Southern States, though, as observed, the sand is not always visible on the surface, yet there it is, invariably, and of a yellowish hue either on the surface or near it."

In giving the preceding from Col. MACLEOD, we take the occasion to suggest, rather in the way of inquiry, than for the expression of any settled opinion, whether the disappearance of the long-leaved pine over large districts of country spoken of by him in a recent communication, may not be caused by the *ravages of some insect*? The possibility of it is brought to mind by the following passages from RENNIE's interesting work on "INSECT ARCHITECTURE—"

This is another of those lighter productions in which instruction is happily blended with amusement, and which ought to be made to beguile or take the

place of those severer studies with which children are too often tasked prematurely, and as absurdly as if a dandy were required to take up the load of a giant.

This extract cannot fail at all events, short as it is, to signify as well the value, as the interesting nature of the study of entomology in all our country schools, as it is obvious that by a little encouragement and explanation, it may be brought within the comprehension of very youthful minds.

"It is somewhat startling to affirm that the condition of the human race is seriously injured by these petty annoyances; but it is perfectly true that the art and industry of man have not yet been able to overcome the collective force, the individual perseverance, and the complicated machinery of destruction which insects employ. A small ant, according to a most careful and philosophical observer, imposes almost invincible obstacles to the progress of civilization in many parts of the equinoctial zone. These animals devour paper and parchment; they destroy every book and manuscript. Many provinces of Spanish America cannot, in consequence, show a written document of a hundred years' existence. 'What development,' he adds, 'can the civilization of a people assume, if there be nothing to connect the present with the past—if the depositories of human knowledge must be constantly renewed—if the monuments of genius and wisdom cannot be transmitted to posterity?' Again, there are beetles which deposit their larvæ in trees in such formidable numbers that whole forests perish beyond the power of remedy. The pines of the Hartz have thus been destroyed to an enormous extent; and in North America, at one place in South Carolina, at least ninety trees in every hundred, upon a tract of two thousand acres, were swept away by a small black, winged bug. And yet, according to Wilson, the historian of American birds, the people of the United States were in the habit of destroying the red-headed woodpecker, the great enemy of these insects, because he occasionally spoilt an apple.† The same delightful writer and true naturalist, speaking of the labors of the ivory-billed woodpecker, says, 'Would it be believed that the larvæ of an insect or fly, no larger than a grain of rice, should silently, and in one season, destroy some thousand acres of pine-trees, many of them from two to three feet in diameter, and a hundred and fifty feet high? In some places the whole woods, as far as you can see around you, are dead, stripped of the bark, their wintry-looking arms and bare trunks bleaching in the sun, and tumbling in ruins before every blast.‡ The subterraneous larvæ of some species of beetle has often caused a complete failure of the seed corn, as in the district of Halle in 1812.¶ The corn-weevil, which extracts the flour from grain, leaving the husk behind, will destroy the contents of the largest storehouses in a very short period. The wire-worm and the turnip-fly are dreaded by every farmer. The ravages of the locust are too well known not to be at once recollected as an example of the formidable collective power of the insect race. The white ants of tropical countries sweep away whole villages with as much certainty as a fire or an inundation; and ships even have been destroyed by these indefatigable republics. Our own docks and embankments have been threatened by such minute ravagers."

GOOD MANAGEMENT, AS SHOWN IN ITS RESULTS.

"Walnut Grove, near GENEVA, N. Y. 20th March, 1846.

"I CULTIVATE about 130 acres of land, and my farm is situated on the shores of the Seneca Lake, a short distance south of Geneva. By particular attention to three simple things for a few years past, I have raised the product of my farm to a point which is exciting a good deal of attention. The things referred to are, very deep plowing and the very free use of clover seed and plaster. In 1844 I raised 1,504 bushels wheat, 600 potatoes, and 100 of clover seed, and cut about 80 tons of hay. In 1845 I raised 1,500 bushels barley, 800 of corn, 1,057 of potatoes and 12½ bushels clover seed, and cut upward of 100 tons of hay. This year I expect to exceed either of the two previous years, and when this additional test of the excellence of my system is furnished, I shall, if you deem it [as we certainly do] of sufficient consequence, communicate the particulars for THE FARMERS' LIBRARY. If not trespassing on your time and politeness, I will thank you to inform me whether clover hay is much sought and used in your city."

Clover hay is not in demand in cities. It is usually reserved by Long Island and other farmers when made, as it not often is, unmixed, for their neat cattle. It makes excellent food for milk cows, cut and mixed, wet, with Indian meal.

* Humboldt, Voyage, lib. vii. ch. 20.

† Amer. Ornith. i. p. 144.

‡ Amer. Ornith. iii. p. 21.

¶ Blumenbach; see also Insect Transformations, p. 231.

There is to be noted a very blameable neglect on the part of farmers in not more generally saving their own clover seed instead of buying. The purchase, in fact, with money, of any thing that he *must* have, and could raise, should be taken as *prima facie* evidence of bad management; and although it may be, under certain circumstances, true economy to do so, it is a safe rule to presume the contrary, and to throw upon him who does it the *onus probandi*.

NUTRITIVE VALUE OF VARIOUS SUBSTANCES.

A RESPECTED subscriber, E. J. of York, whose letter was received during our absence at the South, will excuse all apparent inattention. It is presumed that an error was committed in copying the table. The following is perhaps as much to be relied on as any of the many to be found in the books:

TABLE showing the average quantity of nutritive matter in 1,000 parts of several varieties of animal and vegetable food.

| | | | | | |
|--------------|-----|-------------------|-----|-------------------|-----|
| Blood..... | 215 | White of egg..... | 140 | Pears..... | 160 |
| Beef..... | 260 | Wheat..... | 950 | Apples..... | 170 |
| Veal..... | 250 | Rice..... | 880 | Gooseberries..... | 190 |
| Mutton..... | 290 | Barley..... | 920 | Cherries..... | 250 |
| Pork..... | 240 | Rye..... | 792 | Plums..... | 290 |
| Brain..... | 300 | Oats..... | 742 | Apricots..... | 260 |
| Chicken..... | 270 | Potatoes..... | 260 | Peaches..... | 200 |
| Cod..... | 210 | Carrots..... | 98 | Grapes..... | 270 |
| Haddock..... | 180 | Turnips..... | 42 | Melon..... | 30 |
| Sole..... | 210 | Cabbage..... | 73 | Cucumber..... | 25 |
| Bones..... | 510 | Beet root..... | 148 | Tamarind..... | 340 |
| Milk..... | 72 | Strawberries..... | 100 | Almonds..... | 650 |
| Morels..... | | | | | 896 |

"The above table represents the relative proportion of solid digestible matter contained in 1,000 parts of the different articles of food which are enumerated.

"The nutritive matter of wheat is chiefly starch and gluten, and in this species of grain the gluten is in much greater relative proportion to the starch than in barley, oats, or rye. In rice there is little else than starch. There can be little doubt that the great value of wheat as an article of food depends upon the excess of gluten, which is a nitrogenous substance, and has not inapily been termed the *vegeto-animal principle*.

BOUSSINGAULT's comprehensive and important chapter on "*food and feeding*" will be given in an early number.

Subscribers are again requested to indicate any particular subject they would like to have discussed, and which may be supposed to carry with it an interest to warrant particular attention.

ARRACACHA.

Extract of a letter from Doctor G. B. SMITH, dated

"BALTIMORE, 14th May, 1846.

"I DID not receive, or plant any of the Arracacha sent to you by General DEVEREUX. It was about 1828 or 1829 that I induced Capt. MATTHEWS to bring me a large supply of Arracacha from South America. I retained about 200 of the roots for myself, sent 10 roots to the Massachusetts Horticultural Society, 20 roots to the London Horticultural Society, 20 roots to Paris, and distributed small parcels to Richmond, Charleston, Pensicola, &c. &c.

I cultivated the root for two years, until I found it to be utterly worthless in our climate. I gave some to SAMUEL FEAST, and he kept them several years. We all found them worthless."

BOUSSINGAULT composed a list of equivalents, comparing various things with *wheat flour*, making 100 pounds of that the standard. He puts down *apio* with a query, thus: "*Apio?* (Arracacha)": and according to his estimate it would take 1,050 parts of the substance so referred to to replace 100 of flour.

The same author says rice is often cited as one of the most nourishing articles of diet: he is satisfied, however, after having lived long in countries where rice

is largely consumed, that it is any thing but a substantial, or, for its bulk, nutritious article of sustenance. Haricots (a French bean) he says contains about 0.046 of azote; rice no more than 0.011; so that if the nutritious properties be really in proportion to the amount of azote, it is obvious that $3\frac{1}{2}$ of rice will be required in lieu of 1 of the leguminous seed. He proceeds to say:

"We hear it constantly repeated that rice is the sole nutriment of the nations of the whole of India. But the fact would appear not to be precisely so; and I may here quote M. Lequerri, who, during a long residence in India, paid particular attention to the manners and customs of the inhabitants of Pondicherry. 'The food,' says M. L. 'is almost entirely vegetable, and rice is the staple; the inferior castes only ever eat meat. But all eat kari, an article prepared with meat, fish, or vegetables, which is mixed with the rice, boiled in very little water. It is requisite to have seen the Indians at their meals to have any idea of the enormous quantity of rice they will put into their stomachs. No European could cram so much at a time; and they very commonly allow that rice alone will not nourish them. They very generally still eat a quantity of bread.'"

What is here said of *rice* corresponds with experience, we believe, on southern rice plantations. There it is remarked that, though a man may satisfy his hunger on rice, it won't stay satisfied, but comes on again much sooner than after a meal of Indian corn bread.

The English editor of BOUSSINGAULT says: "The Irish peasantry, who live so much on potatoes, have buttermilk with them, at least—often salt herrings; and a laboring man, it is said, will consume 12 or 14 pounds of potatoes in a day."

In the "WEAR AND TEAR OF HUMAN LIFE," Hayden says Indian corn bears comparison with potatoes as thus: "Proportion of nutrition in 100 parts of potatoes, 24; proportion of ditto in Indian corn, 88. Proportion of water in 100 parts of potatoes, 72; proportion of water in 100 parts of Indian corn, 9."

We do not know to what extent rice may or may not be substituted for Indian corn on some rice plantations, but it may be well that every dispenser of provisions, whether individuals or government agents, should understand the low grade which rice bears, as compared with either wheat or corn, or beans or peas, as to its nutritive qualities. Certain it is that, whether from shorter rations, or more unhealthy occupation and exposure to malaria, the negroes on rice plantations do not increase so fast, nor have they that fat, sleek, greasy, and robust appearance that marks the laborers on cotton and sugar estates, where the ration ranks, in the average, in nutritive and palatable qualities, 25 per cent. above the rations of the European field-laborer.

Under the system of "*tasks*," which prevails so generally in the plantation States—a system which planters have told us they find to be indispensable to the satisfaction of the slave—the common task in mauling rails is 100 a day of their pine rails; and we have seen men lounging about at their ease, at 3 or 4 o'clock, having, as they said, *finished their task*.

Habit, it is well known, may reconcile the stomach and the constitution to almost anything. How else could it happen that men could ever become fond of chewing tobacco or of taking snuff, or be brought to rob the cow of her cabbage, or the hog of his appointed cucumber? Something, as to diet, depends on *season*; much, too, on *climate*. "The delicious fruit, the perfumed air, the verdant landscape, the endless and enchanting notes of the feathered tribe—all prepare a refreshing banquet for the senses of the man whose frame, subjected to the heat of the southern climate, would soon become exhausted but for these precious aids and antidotes that the bountiful Creator supplies. Look next at the inhabitant of the northern region: pent up by icebergs, nought meets his eye save sky and snow; his music is the blustering blast of rude Boreas. The vegetable world, locked up in iron bonds, affords no store tributary to his wants and

gratifications. His country one wild, bleak, icy prison; yet still it is preferred—nay, loved—before the South, with all its downy comforts, because her hardy son calls it the land of his birth and of liberty—in a word, Home. In this region the animal kingdom most appropriately affords a diet, at once nutritive, concentrated, and stimulating, to meet those wants which vegetable food could not adequately supply."

Physicians will probably tell us, after all, that a small admixture of animal with vegetable food is, in general, most wholesome; but it may be doubted whether a diminution of *meat* diet, throughout the country, to the average of that consumed by that class, whichever it may be, which consumes the least, would not lead to an average increment of health. What say you, Dr. GIBBES? Please excuse us, being pressed for time, for asking here, respectfully, for that paper you half promised on the diseases peculiar to the South and West.—Are not such questions intimately connected with the interests of Agriculture—at least, when that interest is viewed in the light that we understand and propose to discuss it? For a man thinking, as too many ever are, of swelling the current that flows, and flows, and will, it seems, for ever flow, from the old Atlantic to the South and West, what more interesting subject of inquiry than the diet, climate, and diseases connected therewith, and with any particular race or description of population?

PRICES CURRENT.

[Corrected, July 15, for the Monthly Journal of Agriculture.]

| | | | | | | | | |
|--|---------------|------|-------|-----|---|-------------------|------|-----|
| ASHES—Pots, 1st sort..... | 100 lb. | 3 50 | @ — | — | Staves, White Oak, pipe, Ψ M..... | 50 | @ — | — |
| Pearls, 1st sort, '46..... | 4 | @ 4 | 064 | — | Staves, White Oak, hhd..... | 40 | @ — | — |
| BEE-SWAX—American Yellow..... | — | @ — | 27 | — | Staves, White Oak, bbl..... | 30 | @ — | — |
| CANDLES—Mould, Tallow..... | Ψ lb. | 9 | a — | 11 | Staves, Red Oak, hhd..... | 24 | @ 26 | — |
| Sperm, Eastern and City..... | — | 26 | a — | 28 | Hoops..... | 25 | @ 30 | — |
| COTTON—From..... | Ψ lb. | 63 | a — | 93 | Scantling, Pine, Eastern..... | — | @ 15 | — |
| COTTON BAGGING—American..... | — | 13 | @ — | — | Scantling, Oak..... | 30 | @ 35 | — |
| CORDAGE—American..... | Ψ lb. | 11 | @ — | 12 | Timber, Oak..... | Ψ cubic foot | 22 | @ — |
| DOMESTIC GOODS—Shirtings, Ψ y..... | — | 52 | @ — | 11 | Timber, White Pine..... | — | 15 | @ — |
| Sheetings..... | — | 7 | @ — | 15 | Timber, Georgia Yellow Pine..... | — | 20 | @ — |
| FEATHERS—American, live..... | — | 25 | @ — | 29 | Shingles, 18 in..... | Ψ bunch | 1 75 | @ — |
| FLAX—American..... | — | 8 | @ — | 83 | Shingles, Cedar, 3 feet, 1st quality..... | 25 | @ — | — |
| FLOUR & MEAL—Genesee, Ψ bbl..... | 4 | @ 4 | 064 | — | Shingles, Cedar, 3 feet, 2d quality..... | 22 | @ 23 | — |
| Troy..... | — | @ — | — | — | Shingles, Cedar, 2 feet, 1st quality..... | 17 | @ 18 | — |
| Michigan..... | 3 | 873 | @ 3 | 934 | Shingles, Cedar, 2 feet, 2d quality..... | 15 | @ 16 | — |
| Ohio, flat hoop..... | 3 | 873 | @ 3 | 934 | Shingles, Cypress, 2 feet..... | 13 | @ 14 | — |
| Ohio, Heywood & Venice..... | 4 | 50 | @ 4 | 75 | Shingles, Company..... | — | @ 28 | — |
| Ohio, via New-Orleans..... | — | @ — | — | — | MUSTARD—American..... | — | 16 | @ — |
| Pennsylvania..... | — | @ — | — | — | NAILS—Wrought, 6d to 30d..... | Ψ lb. | 10 | @ — |
| Brandywine..... | 4 | 25 | @ — | — | Car 4d to 40d..... | — | 4 | @ — |
| Georgetown..... | 4 | 123 | @ — | — | PLASTER PARIS— Ψ ton..... | — | 2 | @ — |
| Baltimore City Mills..... | 4 | @ — | — | — | PROVISIONS—Beef, Mess, Ψ bbl..... | 6 373 | @ 6 | 75 |
| Richmond City Mills..... | 5 | 75 | @ — | — | Beef, Prime..... | 4 373 | @ 4 | 75 |
| Richmond Country..... | 4 | 123 | @ — | — | Pork, Mess, Ohio..... | 9 50 | @ — | — |
| Alexandria, Petersburg, &c..... | 4 | @ — | — | — | Pork, Prime, Ohio..... | 8 | @ — | — |
| Rye Flour..... | 2 50 | @ 2 | 75 | — | Lard, Ohio..... | Ψ lb. | 51 | @ — |
| Corn Meal, Jersey and Brand..... | 2 75 | @ — | 3 | — | Hams, Pickled..... | — | 33 | @ — |
| Corn Meal, Brandywine..... | hhd. | 15 | @ 15 | 25 | Shoulders, Pickled..... | — | 3 | @ — |
| GRAIN—Wheat, White..... | Ψ bush. | — | 95 | @ 1 | Sides, Pickled..... | — | @ — | — |
| Wheat, Red..... | new | — | 80 | @ — | Beef, Smoked..... | Ψ lb. | 5 | @ — |
| Rye, Northern..... | — | 70 | @ — | 703 | Butter, Orange County..... | — | 15 | @ — |
| Corn, Jersey and North..... | (meas.) | — | 60 | @ — | Butter, Western Dairy, new..... | — | 10 | @ — |
| Corn, Southern..... | (measure) | — | @ — | — | Butter, grease..... | — | 63 | @ — |
| Corn, Southern..... | (weight) | — | @ — | — | Cheese, in casks and boxes..... | Ψ lb. | 6 | @ — |
| Oats, Northern..... | — | 34 | @ — | 35 | SEEDS—Clover..... | Ψ lb. | 63 | @ — |
| Oats, Southern..... | — | @ — | — | — | Timothy..... | Ψ tierce | 11 | @ — |
| HAY—North River in bales, Ψ 100 lb..... | — | 45 | @ — | 55 | Flax, Rough..... | — | @ — | — |
| HEMP—American, dew-rotted..... | ton | 70 | @ — | 85 | SOAP—N. York, Brown..... | Ψ lb. | 4 | @ — |
| " water-rotted..... | — | 130 | @ 125 | — | TALLOW—American, Rendered..... | — | 63 | @ — |
| HOPS—1st sort, 1845..... | — | 18 | @ — | 23 | TOBACCO—Virginia..... | a | lb. | 21 |
| IRON—American Pig, No. 1..... | 34 | @ — | 36 | — | North Carolina..... | — | 21 | @ — |
| " Common..... | 25 | @ — | — | — | Kentucky and Missouri..... | — | 21 | @ — |
| LIME—Thomaston..... | Ψ bbl. | — | 70 | @ — | WOOL—Ann, Saxony, Fleeced..... | Ψ lb. | 32 | @ — |
| LUMBER—Boards, N.R., Ψ M. ft. cfr..... | 30 | @ — | 35 | — | American Full Blood Merino..... | — | 26 | @ — |
| Boards, Eastern Pine..... | — | 11 | @ — | 13 | American 1 and 3 Merino..... | — | 23 | @ — |
| Boards, Albany Pine..... | Ψ pec. | — | 12 | @ — | American Native and 4 Merino..... | — | 18 | @ — |
| Plank, Georgia Pine..... | Ψ M. ft. | 30 | @ — | 32 | Superfine, Pulled..... | — | 25 | @ — |

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BRITISH OXEN... BY JAMES H. FENNEL.L.

WE cannot exactly see the applicability of the *title* to the context of this paper, as it is, in fact, a curious, valuable, and highly interesting paper on the qualities of *various races of English cattle*, together with instructive observations on their food, the management of the dairy, statistics of the London milk trade, &c. with little or nothing about *oxen in particular*! We are not sure, however, that the departure of the discourse from the text is wider than we have known it to be on some other occasions—all going to show that in what we read, as well as in what we hear, we should keep our attention alive, and form our judgment of what is said or written for ourselves, and independently, rather than from any index which may be prefixed according to the judgment or caprice of another.

If we were asked the question, What is the use of reading about Agriculture, and especially about English Agriculture? we should be willing to answer by reference even to this single paper. We could easily throw it into the form of a catechism, or series of questions, which should elicit the information and facts embodied in this article, and would then inquire of any one having a right appreciation of what becomes an enlightened agriculturist, not exactly how much money may be made by the knowledge it is fitted to impart, but whether there be, in such papers, anything idle or superfluous, or anything of which an intellectual cultivator of the soil, with a proper share of professional pride and self-esteem, should be willing to remain ignorant? For one, we do not hesitate to confess that we utterly despise and detest, and feel indignant at the thought that an American Republican freeholder, and cultivator of his own freehold, should be *merely* a successful, practical, money-making farmer!—It was not a mere phlebotomizer who discovered the circulation of the blood, nor a simple navigator that invented the chronometer! And your *mere* practical men, while they rarely do much for the progress of their art, except to illustrate, like the machine itself, the value of inventions by men who *think*, are in all professions exactly those who are apt to be made subservient to the men who scheme for themselves. Such men as BOGARDUS, the great machinist, of New-York; and WHITNEY, the inventor of the cotton-gin; and AUDUBON, the unrivalled ornithologist, are not apt to be *practical money-makers*; but who would exchange their genius and their enthusiasm, and the honor of their discoveries and writings, for any amount of sordid wealth, united with stolid ignorance?

THE particular breeds of horned cattle may be readily distinguished by certain characteristics. Thus the Ayrshire cattle, found in many parts of Scotland and England, have small size, [1] fine bone, much flesh, good symmetry, thin and

(1). The Ayrshire cattle which have been brought to this country are of what would be called not "small size," but good sized cattle, about the weight of our ordinary country cattle—not so large as the Short-Horn or Durham, but in shape the Short-Horn in miniature. [*Ed. Farm. Lib.*

loose skin, fine short silky hair, light-red color, sometimes red and white, generally a black muzzle, short and fine horns, bent upward and tipped with black; the Durham or short-horned breed possess large size, good and well-shaped bone, and much flesh, thin skin, fine short moss-like hair, red and white color, sometimes self-red, and short, fine, crumpled horns. The Devonshire cattle, now kept in almost every county in England, particularly in some parts of Yorkshire, have good size, fine bone, and short, fleshy carcass, thin skin, very silky when handled; color generally red, with a light dun muzzle and ring round the eye; horns of medium length, generally growing outward and rather inclining upward. [2.]—The Galloway cattle, found not only in that district of Scotland, but also in Norfolk, and sparingly in North Lancashire, are of large size, strong bone, well-shaped, rather thick skin, and long hair, color black and brindled, no horns. [3.] The Guernsey cattle, met with in the Channel Islands and most of the private dairy farms of England, possess small size, fine bone, very thin skin, and short, silky hair; light cream-color, with black nose; short and crumpled horns, tipped with black. The Hereford cattle have large size, small bone, good shape, thin skin, fine hair, generally red color, with white faces; horns of medium length, and rather inclining upward. [4.] The Highland cattle, great numbers of which are brought to England and fattened, are of small size, well-shaped, have thick skin, long hair; color black and brindled, sometimes dun black; horns of medium size, and bent upward. The Irish breed, of which great numbers are brought to the markets of London, Manchester, and Liverpool, are of large size, strong bone, rough shape, thick skin, long hair; color red, sometimes red and white, mixed or roaned; very long horns, bent upward. The Jersey cattle, commonly called the Alderney, are of small size, fine bone, good shape, [5] have very thin skin, fine, short hair; cream-color and dun, light dun muzzle; horns of medium length, fine, crumpled, and tipped with black. The Lancashire cattle, met with in Warwickshire, Leicestershire, and the northern parts of Lancashire, are of large size, strong bone, roughly made, thick skin, long and rough hair; color various, but more commonly red and white; the horns long and thick, and com-

(2). Let those who are buying Devons be careful to choose them with a rich yellow color around the eyes and muzzle, and as little *white* about the udder and the tip of the tail as they can get. Let not white any where else be tolerated. It is but the breaking out of an old sore, a stain in the blood. [Ed. Farm. Lib.]

(3). This is the breed of cattle which we have thought ought to be imported for the cattle-breeder in our south and south-western mountains, where they run out and have to "rough it," as it is called. They are the *Canada horse* of cattle. The late General FORMAN used to maintain that the injury and death sometimes inflicted upon horses and other animals, ought alone to induce farmers to give preference, as he did, to *hornless* cattle. [Ed. Farm. Lib.]

(4). This race of cattle is here well described. They appear to be "on the rise" in popularity in this country, and holding in England a hard race with the best. Mr. CORNING, near Albany, owns in considerable numbers the only herd we know of, and that in great perfection. They deserve more extensive notice and trial than they have had in this country. [Ed. Farm. Lib.]

(5). We cannot agree in their being generally of "good shape." We have seen a large proportion of all that have been brought to this country, and have owned a few of the best. The best we ever saw was sold to Commodore CHAUNCEY, many years since, and brought to New-York; and we would wager a trifle that we saw a few weeks since a descendant of hers on Long Island. Generally, those we have seen had ugly "*ewe-necks*" and ragged hips; being, in many cases, what is denominated "*goose-rumped*." If, however, the drop from the hip to the root of the tail resembles the rump of a goose, it must be that of the gander, on particular occasions. But the milk of the true Alderney is invariably and exceedingly rich, throwing up a delicious yellow cream, suited to perfect a cup of old Mocha, and giving butter of the finest color. Mr. COLT, at Paterson, has superior specimens of the Alderney, and his son, Mr. JOHN COLT, a very superior prize bull of the Ayrshire breed, imported from Scotland.

One thing which causes improved cattle and sheep to be neglected and undervalued, especially when they fall into the hands of the liberal and the opulent, is, that instead of charging a high price for their services or progeny, they are apt to give them away. What thus comes light is not so apt to be properly valued. To this, of course, there are striking exceptions.

[Ed. Farm. Lib.]

monly slouching. [6.] The Sussex cattle, found in that county and in Kent, are of good size, strong bone, well-shaped, thin skin, fine hair; color red, with white faces; horns of medium length, and bent upward. The Suffolk duns, met with in that county and in Norfolk, are of medium size, stilly made: have the skin of medium thickness, and shaggy hair; color generally lightish dun; no horns. The Welsh cattle, now going out of use very fast in England, are of medium size, roughly made, have a thick skin, long shaggy hair, black color, sometimes black and white; horns thick and long, in some of medium length.

Our various breeds of cattle are generally of hardy constitution. The Guernsey and Jersey cattle, though of very good constitution in their native islands, are delicate when brought to England, requiring shelter and careful attention.

All the species and breeds of oxen have only thirteen pairs of ribs, being a less number than in either the American or European bison. Certain bones, found in the heart of all ruminating animals, except the horse and the stag, have been mentioned by some writers on comparative anatomy as accidental ossifications, found only in the adult animal, particularly in the male. This, however, is erroneous; for these bones are constant, and are found in the calf as invariably as in the adult, in both male and female. Professor Harrison thinks that the principal purpose of these bones is to protect the aorta from being endangered by the enormous muscularity of the left ventricle in these animals, to serve as a fixed point of action to muscular fibres, to prevent total closure of the ventricles, and to preserve the large sinuses from the powerful resilience of the aorta, to which object the very remarkable hard mass of fat found at the base of the heart in these animals is also assistant.

Oxen are greatly excited at scarlet, probably because, in a state of nature, they do not frequently meet with this color; which is, therefore, strange to them; offering, too, a strong contrast with the surrounding cool tones. "A bull," says Barnaby Goodge, "will wax furious at the sight of any red thing; and the elephant and the lion cannot in nowise abide the sight of any white thing."* Mr. R. D. Hay, in an interesting work upon colors, remarks that though red-yellow excites an agreeable, cheerful sensation, bright yellow-red conveys an intolerably powerful impression, the active side being here in its highest energy.

"It is, therefore, no wonder that impetuous, robust, uneducated men should be especially pleased with this color. Among savage nations the inclination for it has been universally remarked; and when children, left to themselves, begin to use tints, they never spare vermilion and minium. In looking steadfastly at a perfectly yellow-red surface, the color seems actually to penetrate the organ. It produces an extreme excitement, and still acts thus when somewhat darkened. A yellow-red cloth disturbs and enrages animals. I have known men of education to whom its effect was intolerable, if they chanced to see a person dressed in a scarlet cloak on a gray, cloudy day."

In all domestic animals, the skin or hide forms one of the best means by which we can estimate their fattening properties. In the handling of oxen, if the hide be found soft and silky to the touch, it affords a proof of a tendency in the animal

(6). These are nearly identical, probably, with the famous *Bakerell*, or *Leicester*, or *Distleg* cattle, sometimes called Long-Horn—very straight on the back, tail setting high up on a line with the spine, back generally white, with long, ugly, hanging-down horns. They have gone out of fashion in England, chiefly on account of their laying their fat all on the *outside*, like a coat of plaster on a brick wall. Bakewell deserves great credit for the leading part he took in demonstrating the practicability of effecting great and substantial improvement in the qualities of cattle, by a careful and judicious selection of such as, with the fewest defects, possessed in the highest degree the points and properties which were most desirable, and would make up an animal to yield the most profit in the shortest time. But while others took the hint and pushed the science far beyond anything he attained, he in some measure blurred his own character as a farmer by a sinister or churlish concealment or mystery, if not disingenuousness. He thought it allowable, it would seem, to learn all he could, and to lock up from his neighbors and friends what he did learn, in his own breast. This may do in other arts and trades, but is utterly incompatible with all liberal notions of the character and duties of an *agriculturist*! It is the boast of the industrious and fair-minded farmer, that as he works in the open day, so he wishes not to hide his lights under a bushel when they may be useful to his neighbors.

* *Booke of Husbandry*, 1560. p. 127, b.

to take meat. A beast having a perfect touch will have a thick, loose skin—floating, as it were, on a layer of soft fat, yielding to the slightest pressure, and springing back toward the finger like a piece of soft, thick chamois leather.—Such a skin will be usually covered with an abundance of glossy hair, feeling like a bed of moss, and hence is very appropriately termed a mossy skin. But a thick, firm skin, which is generally covered by thick-set, hard, short hair, always handles hard, and indicates a bad feeder.

The size to which cattle may be fattened is truly astonishing. Evelyn mentions the exhibition in London of an ox that was 17 feet from the end of the tail to the nose. At Bartholomew Fair, in 1703, a great Lincolnshire ox was exhibited, measuring 12 feet from the rump to the face, and standing 19 hands high. The Bradwell ox, five years old, weighed 4,320 pounds; but it was so fat that it moved with difficulty. Mr. T. Bond, of the Lower Marsh, Lambeth, killed an ox whose total weight was 294 stone 3 pounds, with 40 stone 4 pounds of loose fat.* As a general mode of fattening oxen, it has been recommended to give them daily 2 lbs. of oil-cake, 5 lbs. of barley-meal, and 5 lbs. of hay-chaff, with a plentiful allowance of Swedes. By a composition for fattening cattle, manufactured by Mr. Warnes, of Walsingham, Norfolk, it is said that beef may be grown more cheaply than by any of the ordinary methods of feeding. Everybody knows that horses frequently pass some of their corn quite undigested; but this circumstance rarely happens with horned cattle: for, as they chew the cud, they can digest their food more effectually than those which do not—hence it is well known to graziers that one-third less will be enough for an ox than for a horse or an ass. According, however, to the experiments of De Dombassle and Biot, this depends, at least in the case of roots, such as carrots and potatoes, upon boiling, so as to break the globular crust enveloping the nutrient matter,† which the stomach cannot well effect.

Cattle are fond of the tender tops of furze and in Shetland they show a liking for the drift sea-weed on the beach. Linnæus says that cows are fond of the leaves of the bird cherry. Culpepper states that the leaves of the black alder “are good fodder for kine, to make them give more milk.” Oxen will sometimes browse also on the leaves of the privet.

A few acres of land cultivated with burnet, lucerne, cabbage, turnips, and carrots, will supply the cow-keeper with a constant succession of green fodder for his cattle, and save him the expense of purchasing so much hay, frequently at a high price, and greatly improve the flavor and increase the quantity of the milk. For the latter purpose, carrots are excellent in winter and early in the spring, but the butter made of the cream is generally a little higher colored, being a deep yellow, though not worse in quality than that which is made when the cows feed in the summer months on sweet meadow grass. Some farmers give their cows malt-dust, especially in the winter—not the malt-kiln dust, which should be reserved for a top-dressing for corn, but the germ of the barley, which sprouts out while it is making into malt. After the malt has been dried on the kiln, and passed over a wire-screen, it falls through and separates from the malt. This malt-dust is of a very warm, dry, nourishing quality—causes the cows to drink freely, and yield a large quantity of excellent milk. The London milk would, probably, have a less watery flavor, if the bad quality of grains, given so largely to the cows, were corrected by the constant addition of some malt-dust, which is found to improve the quality and flavor, and to augment the quantity of the milk. Each cow might have half a peck of it at her breakfast, and as much at the time of milking in the afternoon. From M. Boussingault's experiments on the feeding of cows with beet-root and potatoes, we learn that when either of these vegetables is given, to the exclusion of all other food, it does not fatten cattle nor increase the quantity of their milk. Two cows, which were fed exclusively on beet-root, fell off in 17 days nearly one-sixth, and their milk diminished from 8 to 9 litres per day to 5 litres; but, when they were turned into pasture, they soon resumed their former weight, and yielded their former quantity of milk. They were next fed exclusively on potatoes, when they fell off still more in flesh than they did on beet-root, and the milk was reduced to two litres each per day; but,

* The Smithfield stone of 8 lbs. we presume is what is here referred to.

† This matter, formerly named *amadine*, from its occurring in starch, M. Biot has termed *dextrine*, from its singular property of polarizing the rays of light toward the right.

on being placed on a mixed food of hay, chopped straw, beet-root, and potatoes, they regained their flesh, and yielded the same quantity of milk as at first.

It is a vulgar notion that the butter-cup, or crow-foot, abounding in meadows, is the cause of the butter having sometimes a bright yellow color. Stillingfleet, in his *Observations on Grasses*, says he believes this to be a mistake; for he never could observe that any part of the plant was touched by cows or any other cattle. The proof that cows do not eat this acrid plant is strikingly visible in pastures, where, though all the grass is cropped to the very roots, numerous buttercups spring up, flower, and shed their seeds in perfect security. They are indeed cut down, and made into hay, together with the rest of the weeds that usually infest every meadow, and in this state are eaten by the cattle, partly because they are incapable of separating them, and partly because, by drying, their acrimony is considerably subdued; but there can be no doubt of their place being much better supplied by any sort of real grass; for the excellence of a meadow consists in its producing as large a crop as possible of agreeable and nutritious herbage. Every butter-cup ought, therefore, to be extirpated, if practicable, along with the hemlock, kex, and other umbelliferous plants which are common in most fields. Linnaeus, in his *Flora Lapponica*, p. 195, says that it was thought by some people that the marsh marigold made the butter yellow, but he denies that the cows ever touch that plant: yet he thinks that all kinds of pasture will not give that yellowness: then he observes that the best and yellowest butter that he knows, and which is preferred by the dealers in those parts to all other butter, was made where the cow-wheat grew in greater plenty than he ever saw it anywhere else. Mr. Edwin Lees mentions an instance of seven cows having been poisoned by feeding upon the common meadow-saffron (*Colchicum autumnale*) in a field at Llanvihangel Pentre, South Wales, where it grew in great profusion. The farmer turned them into the meadow in the early spring, after a winter's feeding on hay, and, being impatient for green food, they devoured this plant, and were all found dead next morning.* A valuable cow belonging to Mr. William Morrow, of Drunkerrin, near Armagh, died from being overfed with frosted turnips, and, after being turned out, drinking copiously of cold water.—Practical farmers and veterinarians assert that the essential oil of turpentine, in doses of two fluid ounces, or a common wine-glass full, administered in any mild fluid, acts as a specific in all such cases.

From the late Earl Spencer's observations on the period of gestation of seven hundred and sixty-four cows, it appears that it extends to two hundred and eighty-four days, not two hundred and seventy days, as formerly stated. As all high-bred animals have a *natural tendency to degenerate*, if not kept up by due intermixture of blood, it is very desirable to know in what manner the breed may not only be kept up to its standard, but also improved. Hitherto there has not been a sufficiently extended and carefully conducted series of experiments upon this subject; and, consequently, there are no positive data on record enabling us to determine, by comparative proximity with the legitimate zoological standard of the species, the probability of permanence in any particular breed. [7.]

In improving the form of cattle, it is necessary to select a well-formed cow, proportionally larger than the bull. Mr. Cline, speaking upon anatomical principles, says that the base of the cone which forms the chest of a cow should be capacious, to afford the lungs sufficient room, and thereby promote the digestive powers of the animal, (though the Devonshire cattle are often deficient in their chest;) the hips and the twist should be broad, that the cavity for the fetus may be sufficiently large; the breadth of the loins is always in proportion to that of the chest and the pelvis; the head should be small, and the length of the neck should be proportioned to the height of the animal, that it may collect its food with ease; the muscles and tendons should be large, to enable it to travel with

(7). These are views and opinions we have long maintained on this subject, and have hence expressed the apprehension that for want of experience and continued attention, imported cattle of improved, and more especially of made-up artificial races, would be apt to degenerate in this country. [Ed. Farm. Lib.

* The Naturalist, vol. i. p. 215.

greater facility; [8] the bones, however, should not be coarse and large; a short-legged cow is preferable; the hair should be neither staring nor hard. A Gloucestershire rhyme describes a beautiful cow as being

" Long in her sides, bright in her eyes,
Short in her legs, thin in her thighs,
Big in her ribs, wide in her pins,
Full in her bosom, small in her shins,
Long in her face, fine in her tail,
And never deficient in filling her pail.

There is no month in the year equal to March for the production of calves, if we take the whole country into our calculation. As cows will propagate their species at any period of the year, it consequently depends in most cases upon the views of the farmer or grazier regarding the ultimate profits arising from cattle that we everywhere find some cows producing calves at one season of the year and some at another. Spring, however, is the principal season with breeders of stock in general, since calves produced early in spring commonly make out better, and are more profitable upon the whole (except such as are intended for the butcher) than those produced at any other season: whereas cows that calve several months before there is a supply of grass, scarcely ever yield so much milk during the succeeding summer as if the case had been otherwise; and hence the profits are lessened, to whatever purpose the milk may be converted. However, in large and populous towns and communities there is a constant demand for milk (and butter too) throughout the whole year, so that those persons who keep dairies, and supply their customers during the entire summer, are under the necessity of meeting the demand during the winter also: and hence some of their cows are always in full milk, that is, newly calved. Much, however, is now effected by the use of turnips, mangel-wurzel, cabbages, carrots, and other succulent vegetables, in the way of causing cows to supply plenty of milk during the winter; but as it is a well ascertained fact that these vegetables cannot be cultivated but at a greater cost to the farmer than summer grass, this system is but little resorted to, except in situations where it always commands a remunerating price to the dairyman. In the principal districts where cheese is made in large quantities—as, for instance, Cheshire, Derbyshire, Gloucestershire, Dorsetshire, &c.—the dairy farmers invariably contrive to have their cows calving sufficiently early in the season to enable them to commence cheese-making at the period there is enough of grass for the cows being turned out to pasture; and this process of cheese-making is regularly continued into the autumn: and in the early part of the winter the cows are no longer milked, as there exists a somewhat general opinion that cows that are allowed to go dry for three or four months before calving are apt to yield a greater quantity of milk during the next season. Besides, there is a saving in the expense of maintaining dry cows; for it is the general custom in the dairying districts to feed these cows upon straw and a small quantity of hay, or else a few turnips, after they no longer yield milk, until within a short period of their calving.

Dr. Lyon Playfair, having selected a cow in good milking condition and at the time fed upon after-grass, ascertained the average amount of her milk for five days, and then proceeded to analyze it. In the first day it was observed that the milk of the evening contained 3·7 per cent. of butter, and of the following morning 5·6 per cent. The deficiency in the first observation is referred to the consumption of a greater portion of the butter or its constituents, from respiratory oxidation during the day, when the animal was in the field, than during the night, when it was at rest in the stall. When confined during the day, and fed with after-grass in a shed, the proportion of the butter rose to 5·1 per cent.:

(8). Greater attention to this traveling capacity in cattle and hogs was needed formerly than now; though it is yet necessary. Cheapness of transportation by steam, and improvement in the art of curing provisions to suit our own and the foreign market, will cause a much larger proportion of beef and pork to be slaughtered on the spot where it is fattened, than has heretofore happened. One of the best known and most extensive graziers in Kentucky, General T. SHELBY, went this summer to England expressly for the purpose of looking thoroughly into this subject, and promised to favor us, for THE FARMERS' LIBRARY, with the result of his observations.

when fed with hay, the butter was 3.9 and 4.6 per cent. : when fed with portions of potatoes, hay, and bean flour, the butter was 6.7 and 4.9 per cent. : with hay and potatoes, 4.6 and 4.9 per cent. These facts, together with Bous-singault's experiments, and the observations of dairymen in different localities, are opposed to Dumas's theory, that the butter in milk arises solely from the fat contained in the food : for it may reasonably be referred to the starch and other unazotized elements of the food, as maintained by Liebig. Potatoes are particularly favorable to the flow of milk and increase of butter, from the starch they contain ; so is malt refuse. Porter and beer are also well known to be favorable to the production of butter, both in the milk of woman and of the cow, although these fluids do not contain fat.* The quantity of caseine (cheese) in the milk was found by Doctor Playfair to depend on the quantity of albumen in the food supplied on different days to the cow, and to the supposed destruction of the tissues by muscular exercise. Peas and beans are the food which yields most caseine. Pasturing in the open field is more favorable to the formation of caseine, while stall-feeding is more favorable to the formation of butter. The proportion of butter in the milk of woman is increased by rest and the diminution of the respiratory oxidation.

In the neighborhood of towns and villages, where milk and other products of the cow are in demand for the market, a good food for rearing the young cattle may be supplied by dissolving pearl sago in boiling water. Eight quarts of this solution of pearl sago will cost only half the price of the same quantity of milk, and will prove even more nutritious than the latter. Oil-cake is an excellent food, along with turnips, to fatten calves, and the manure the cattle drop while upon this diet is very serviceable to the crops. An Ayrshire farmer, who uses annually about £120 worth of oil-cake for his cattle, assures us that disease scarcely ever occurs among his stock, although formerly he used to lose many of them, especially calves, which were frequently carried off by that fatal and malignant malady commonly called *black leg*, but which has entirely disappeared since he has commenced the use of oil-cake. Turnips, with a liberal allowance of oil-cake, are found conducive to early maturity. After a long course of experience, this grazer is of opinion that cows should calve during February ; for when born later than this month, the calves are, while in the farmer's possession, an eyesore, from their being so far behind their compeers in growth : but if calved earlier than February, the cows are apt to fail in their secretion of milk before the grass can afford them a good bite.

Mr. M'Bryde is of opinion that, to obtain the greatest amount of beef in the shortest time, the cattle should be tied up by the necks in stalls, and fed for six or eight weeks upon turnips, with oil-cake, bruised oats, beans, &c. Mr. McCulloch, factor at Logan, whose opinion is of great weight, thinks that ordinary sized cattle would feed fully as well tied up in properly ventilated houses : but that large cattle would do better in hammels, where they had a small space to move about, and which prevented their feet giving way. He observes that the cattle in the hammels consume more food than those stall-fed : but whether this extra food is expended in the production of motion or of fat he has not ascertained. From his experience he prefers cutting turnips into slices of from one and a half to two inches thick ; and while this thickness prevents some little waste of the turnips from being too much reduced, it, at the same time, allows the cattle to masticate with ease, and to fill their stomachs with less trouble, and consequently there is less expenditure of the body. The system adopted at Logan Mains, in giving oil-cake to cattle, is to grow and to preserve the seed, which is bruised and boiled along with equal proportions of bruised oats and bear, and of this mixture, from four to six pounds per day are given hot, after the cattle have been tied up about two months. The expense of this diet is amply repaid, and the manure is very much enriched. When oats are at a low price, a few pounds of them per day may be advantageously added to the turnips. If lump potatoes can be had for not more than seven or eight shillings per boll, it might be profitable to feed cattle upon them.

* On the farm of Mr. Castle of Northbourne, in Kent, a cow, having got access to some fresh brewed strong ale left out to cool, drank so plentifully of it that she was shortly taken ill, and died in a few hours in a state of intoxication, although proper remedies were administered by a furrier who was called in.

Some French philosophers have found that, from the same food, a cow yields in milk twice as much food available to man as a feeding ox will yield in flesh and fat. M. Donn  states that there is a striking analogy between milk and blood, and says that he has injected milk into the veins of many animals without causing any injury. From lean cattle, poorly kept, milk is never known to be good. London milk is generally deficient in thick, rich cream. The Durham cows yield a large quantity of milk, and numbers of them are, therefore, kept in London dairies and in the dairy-farms about Manchester. Milk of a rich quality, fit to supply good cream and butter, is generally yielded in small quantity, as in the case of the Galloway, Guernsey, Hereford, Highland, and Jersey cows. The cows used for the London milk market are mostly of a large size, with short horns, and are distinguished by the name of Holderness cattle—from a district so called in the East Riding of Yorkshire. (9). It appears that the entire number of cows kept by the London cow-keepers amounts to 8,500—namely, 7,200 in Middlesex, 681 in Kent, and 619 in Surrey. Each cow, on the average, yields nine quarts per diem, or 3,285 quarts per annum; but deducting 285 quarts for suckling, casualties, &c. gives us a total of 6,375,000 gallons of pure milk to supply the consumption of London and its vicinity. But as the retail venders adulterate it with at least 120 per cent. of water, the total annual consumption of *what is called milk* amounts to 15,937,500 gallons. Each Londoner, on the average, consumes annually ten gallons, three quarts, and nearly two pints of milk. The price at which milk is sold to the retail venders varies from 1s. 8d. to 1s. 10d. for eight quarts; which, taking it at the medium of 1s. 9d. gives a total of £278,906 5s. for the wholesale price, and an annual expenditure, after the assistance of the pump, of £697,265 12s. 6d. According to the occupation abstract of the census of 1841, the number of persons employed in feeding cows and selling milk in London was 2,764. While the milking of cows is going on, the pans should be placed in boiling water. If the milk be strained into one of the hot pans, and covered with another hot pan, proceeding in like manner with the whole mess of milk, you will find that you will have double the quantity of good rich cream, and double the quantity of sweet and delicious butter. It has lately become very common, especially in large dairies, to keep milk in zinc bowls, which have been recommended for promoting the formation of a larger quantity of cream, owing to galvanic action; but the use of them has been attended with poisonous effects.

"I could scarcely have believed," says Dr. Elaines of Berlin, "that zinc vessels could again have come into use for holding fluids used for alimentary purposes, as Vauquelin, forty years ago, proved that such were certain, after a short time, (when the milk has become sour and the pans themselves sour,) to hold a considerable portion of zinc (and salts of zinc) in solution. I have found by experience that a solution of sugar, which had stood only a few hours, in summer, in a zinc vessel, contained a considerable amount of zinc salts. Cream will separate more easily from milk kept for a short time in a zinc vessel; but as the milk will turn acid much sooner than a solution of sugar, it is the more to be apprehended that some zinc will be dissolved, and such milk will be the more noxious, as it is well known that even a small amount of zinc will cause violent spasmodic vomitings."

The coagulation of milk under the influence of a simple wet membrane is a remarkable phenomenon not easily explained. Berzelius tried a very curious experiment with a view of ascertaining the effect on the membrane itself. He took a bit of the lining of a calf's stomach, washed it clean, dried it as completely as possible, weighed it carefully, put it into eighteen hundred times its weight of milk, and heated the whole to 120 degrees Fahrenheit. After some little time, coagulation was complete. He then removed the membrane, washed, dried, and weighed it again; the loss amounted to rather more than one-seventeenth of the whole. According to this experiment, one part of the active matter dissolved from the membrane had coagulated about thirty thousand of milk.

The experiments of Professor Traill show that the addition of some cold wa-

(9). This breed is distinguished by its large frame of coarse bone, and is said to have formed the chief basis of the Durham or "*improved* Short-Horn." They were formerly, in Maryland, called the "Gough breed" of cattle, from their having been imported by Mr. Gough, of Baltimore. Mr. Semmes, of Delaware, had a herd of them, and we have seen many possessing all the characteristics of the breed at "Blakford," a beautiful estate of the late patriotic Governor WRIGHT, which has returned to the family, and been highly improved in the possession of his son, W. H. D. C. WRIGHT, Esq.

[Ed. Farm. Lib.

ter facilitates the process of butter-making, especially when the cream is thick and the weather hot; that cream alone is more easily churned than a mixture of cream and milk; that butter produced from sweet cream has the finest flavor when fresh, and appears to keep longest without acquiring rancidity; but the buttermilk so obtained is poor and small in quantity; that the scalding of the cream, according to the Devonshire method, yields the largest quantity of butter, which, if intended for immediate use, is agreeable to the palate and readily salable; but, if intended to be salted, is most liable to acquire, by keeping, a rancid flavor. The process of scalding is troublesome, and the milk, after the removal of the cream, is poor, and often would be unsalable, from the taste it has acquired from the heating. It also appears that churning the milk and cream together, after they have become slightly acid, seems to be the most economical process on the whole; because it yields a large quantity of excellent butter, and the buttermilk is of good quality; and that the keeping of butter in a sound state depends on its being obtained as free from uncombined albumen or caseine and water as it can be, by means of washing and working the butter when taken from the churn.

By a newly invented block-tin milk-churn, now in use at Lisburn and other parts of Ireland, butter can be made in ten minutes at all seasons of the year. In salting or curing butter, it is preferable to use vessels made from timber which has been previously boiled four hours, to free it from the pyroligneous acid; or else made of the lime tree, the wood of which does not contain this acid. Butter will keep without salt if melted over a slow fire to expel all its watery particles. To remove the bad smell and disagreeable taste of rancid butter, and restore its sweetness, it is only necessary to beat it in a sufficient quantity of water, into which put fifteen drops of chloride of lime for every pound of butter. After having mixed it till all its parts are in contact with the water, it may be left in for an hour or two—afterward withdrawn and washed anew in fresh water. The chloride of lime has nothing injurious in it, and, therefore, the number of drops may be increased if thought proper.

The hoofs and horns of a hundred head of cattle are daily consumed in Campsie Alum Works in the manufacture of that beautiful yellow salt, prussiate of potash, which Mr. Macintosh introduced among the calico-printers, who use it extensively to produce very showy blues and greens. It is prepared by burning the hoofs and horns in iron pots, along with potash and a requisite quantity of iron. The residue, after this combustion, is lixiviated with water, and when the solution is sufficiently concentrated, the prussiate of potash crystalizes.

It would be well if some good cook, acquainted with a little chemistry, would make some experiments upon the cookery of bone, which might be made to yield many soups and other palatable and nutritious dishes. Professor Brande observes that—

“Bone constitutes, upon an average, a fifth part of the weight of an animal, and one-third of the weight of bone may be reckoned as good substantial food. The weight of butchers' meat consumed in London annually is supposed to be 172,000,000 lbs. including 35,000,000 lbs. of bone, which would, yield 11,000,000 lbs. of dry gelatine, or real nutritive matter, which, at present, is so far wasted as not to be applied to the direct support of human life. The bones of pork, game, poultry, and fish, not included in this statement, must also be of great amount. From all or any of these an excellent dry gelatine, or portable soup, might be prepared and sold for about 2s. per lb., equivalent to three or four times its weight of raw meat.”

Ground bones are employed as a manure for dry soils with the very best effect. Mr. Huskisson, who estimated the real value of bones annually imported (principally from the Netherlands and Germany) for the purpose of being used as a manure, at £100,000, contended that it was not too much to suppose that an advance of between £100,000 and £200,000 expended on this manure, occasioned 500,000 additional quarters of corn to be brought to market. When bones are intended for manure, they may be dissolved by pouring some sulphuric acid over the bone-heaps, keeping them turned until they are thoroughly in contact with the liquid.

[Journal of the Transactions of the Highland and Agri. Soc. of Scotland.]

THE POTATO ROT has made its appearance in the great Miami Valley. One field of eighteen acres, it is represented, is so badly injured that the owner has turned his hogs upon it. The crop this season in the west generally is said to be a very abundant one, and generally of excellent quality, and we hope that it is not seriously to be injured by disease.

EGGS.

HOW TO PRESERVE—THE EGG TRADE OF CINCINNATI.

For preserving eggs the following directions are given in the Boston Cultivator in a way to inspire the fullest confidence :

" We have seen many recipes for preserving eggs, and have tried several without success. They have been saved in good condition, a year or more, in lime-water ; but this requires much skill, as the lime-water may be too weak or too strong, there being a vast difference in the quality of lime. These nice chemical preparations may answer for those who are doing business on a large scale, but for common domestic purposes they will not answer. We put down some eggs in plaster of Paris last July, (1844,) in a close vessel. First, a layer of plaster, then a layer of eggs, not allowing one egg to touch another. On top we put a few inches of plaster, then covered the vessel over closely. The eggs were fresh, being put down as fast as they were laid, or within three or four days. They were placed with the small end downward, and placed in a dry cellar. In another vessel we put down some at the same time, and in the same manner, with fine salt. Eggs from both lots have been tried every month from January ; the last trial was on the first of this month, (June, 1845,) when the eggs had been put down nearly eleven months. They have all proved to be perfectly sweet and pure ; and at the last trial, the white, in a raw state, had its natural taste, and those saved in salt had no perceptible taste of salt. The eggs looked, when broken, like recently laid eggs, excepting for the last three months. In those saved in salt, the yolk adhered to the shell ; on this account, and as salt is liable to melt in a cellar, we prefer the plaster."

There is a patented establishment in Baltimore, and one has lately been erected in Brooklyn, N. Y. in which not only eggs, but strawberries, raspberries, peaches, pine-apples, oranges, and fruit of every sort, may be preserved throughout the year.

The egg trade of Cincinnati alone amounts annually to 10,000 barrels, containing 963,000 dozen, valued at \$90,361 50, besides 1,233,333 dozen, valued at 8 cents a dozen, runs up the total value of this apparent trifle, in the business of a single city, to \$97,066 64. There are six *egg houses* in that town, one of which shipped 4,624,400 eggs.

THE ATMOSPHERIC CHURN—A FAILURE

In a recent number of THE FARMERS' LIBRARY AND JOURNAL, I have seen an account of an *Atmospheric Churn*, whereby the butter was churned by transmitting through the cream a current of air. I have tried this with small quantities of cream, at the most favorable temperature, and have never obtained butter in less than *two hours*, when twenty minutes were sufficient by the ordinary process. Having given it a fair trial, I am sorry to conclude that the plan, which appeared so plausible, is *not* practicable.

Yours, respectfully, N. B. WEBSTER.

Portsmouth, Va.

P. S. I hope to send you several subscribers to THE LIBRARY AND JOURNAL.*

* We are receiving similar encouragement every day, from gentlemen of influence and abilities in all parts of the country. We can only say, most thankfully, that we shall labor without stint to deserve it ; and would do so, if we possessed Astor's estate, were it only for the good cause.

NEW STAPLES RECOMMENDED.

THE CULTURE OF THE VINE IN THE UNITED STATES.

THE average crop of wheat in England, one year with another, has been estimated at eighteen millions of quarters, or one hundred and forty-four millions of bushels. The whole crop of grain in the United States was estimated by the census of 1840 at—

| | |
|-------------------|---------------------|
| Wheat | 84,823,272 bushels. |
| Barley | 4,161,504 " |
| Oats | 123,071,341 " |
| Rye | 7,291,734 " |
| Indian Corn | 1,377,531,875 " |

Making a total of grain.....1,596,879,726 bushels.

But there is nothing more remarkable in the husbandry of any country than the liability of the wheat crop in England to be seriously affected and diminished, to a degree sometimes amounting to a national calamity, by the occurrence of *only a few days of unfavorable weather*; thus making the supply of the staff of life either very abundant or very scarce, according to the uncertain and uncontrollable vicissitudes of the seasons. It happened thus that while the wheat crop in 1844 was estimated at one hundred and ninety-two millions of bushels, that of the next year, 1845, was only one hundred and twenty millions, making a difference in that comparatively small country, of seventy-two millions of bushels; the former year yielding forty-eight millions of bushels *above*, and the second twenty-four millions *below* an average crop!

The vast extent of our country, however, having several single States larger than England, exempts us from these extreme fluctuations; because the deficiencies of one State may be supplied by the redundance of another. The baleful influences that may prevail over a small territory like that of England are not likely to spread over a vastly greater geographical extent, the organized portions of the United States being more than twenty times the size of England; and besides, the greater diversity of our great staple-crops renders less precarious the hopes and condition of our agriculturists, and yet more the condition of those who have to buy bread; for, in addition to all, or nearly all, the great staple crops of England, we have our crops of cotton, and sugar, and tobacco, rice and Indian corn; and it is well worthy of inquiry, considering how low the prices of provisions are likely to continue, what stands in the way of *extending our crops of oil, of flax, hemp, silk, madder, and the grape and grape wine?*

Were we to pay respect to the signs which Nature herself has hung out on every highway and by-way throughout the country, we could not fail to recognize in them so many proclamations of our ability not only to produce abundance of *wine*, but *silk* also, both of which we still get from France to the tune of so many millions of dollars annually. Unfortunately, however, instead of being a nation of wine-drinkers, and thereafter a sober people, as all wine-drinking people are, we have learned from our ancestors to substitute for the grape and the refined and refining juices thereof, still-burnt, inebriating whisky and stupefying malt liquors. Walk or ride, in almost any direction over a great part of our country, and there you meet the *mulberry* and the *vine*, flourishing in spontane-

ous luxuriance, seeming obviously to suggest, at every turn, the rearing of the silk-worm and the culture of the grape as among the most palatable and healthy of all fruits, and the manufacture of wine as a beverage that everywhere implies and is accompanied by national sobriety and industry.

We were never more struck with this than in a late ride in Prince George's county, down as low as Nottingham. Through all that county, (and no less in our mountainous regions less adapted to the plow,) as in fact through all southern grain States, there is a wide margin or turning-row left along every fence side, enough on every plantation to make a snug New-England farm. These immense turning-rows and fence sides soon grow up in briars, and almost everywhere exhibit *luxuriant volunteer grape vines*—going unequivocally to indicate the congeniality of the soil and climate to the production of the grape and the wines for which the grape has been used from the days of Noah to the present time. Notwithstanding this clear intimation of a kind Providence inviting to the cultivation and improvement of this delicious and wholesome fruit, and, as it were, flaunting in our very face and eyes the proof of our facilities for producing it, how many farmers there are still, who let season after season pass without having a single well-cultivated vine about their premises! for even one would supply their table with grapes enough for one family. Fortunately this classical and interesting branch of industry appears to be taking firm root in some of the younger States, to whom we on the sea-board should have set the example. In Ohio and Indiana, where it seems to be making most steady progress, settlers from the Rhine have probably contributed to push it forward by their practical knowledge of the subject, counteracting in this way the pernicious influence and bad habits of too many others who bring with them the love of liquor and all its riotous and disorderly propensities.

We submit an essay on the *Culture of the Grape* (taken from the *Cincinnati Farmer and Gardener*), which, from its locality as well as its contents, being ourselves without much experience, we suppose to be a safe guide for those who propose to embark in the business. If in addition to this we could be favored by Doctor UNDERHILL with a sketch of his observations and experience in the cultivation of the grape for the table, we could not offer to the readers of this work a more acceptable or valuable present.

The Doctor's experiments have now been long continued, extensive, expensive, varied and successful; and we are glad to say that one result is, that while many have been deterred from going into the business from an apprehension that any addition to *his* supplies would overstock the market, we have understood, but not from him, that he sends to the New-York market, some \$8,000 or \$10,000 worth in a season. Be that as it may, it is certain that he gets double the price for his grapes now that he did thirteen years ago, and feels confident that no amount of production that can take place will keep way with the rapidly increasing consumption of and demand for table grapes. He who is so familiar, by much experience, with the subject, is well convinced that, of all others, the culture of grapes opens now the most inviting field for the investment of capital and the exercise of horticultural enterprise in the neighborhood of all our large cities; and we understand him to be well provided to supply the materials and necessary instructions for carrying it on to those who may be inclined to embark in it. Nothing, we may add, could be more discouraging than his first experiments, and the obstacles he encountered for several years—obstacles which too easily overcome the timid and the indolent, but which have in his case been con-

quered by that intelligent and well-directed perseverance which usually conquers difficulties in every walk of life, and by which he has even conquered, after years of mutual warfare, that loathsome and pestiferous insect, the *rose-bug*.

For the table, the Doctor relies mostly on the *Isabella*, though, as will be seen, the *Catawba* has preference in the wine-making vineyards of Ohio. We are not without hope that the Doctor may find leisure and inclination to favor our readers with practical hints that may assist to smooth the way to a general enjoyment throughout the country, of this delightful fruit, except so far as the difficulty in the way of it may continue to consist in that disreputable *supineness* which alone need prevent any man who has a rood of land from having, for every member of his family, and every neighbor or friend who visits him, at least as many delicious grapes as they may choose to eat.

Speaking on the experience of fifteen or twenty years, Dr. Underhill believes the grape crop, with good management, to be in itself less precarious than any field crop cultivated in the country—less so in America than in Europe, and *far more remunerating*.

To show how precarious is the product of grapes, as connected with the manufacture of wine, in the best wine districts on the Rhine, we may refer again to a recent exposition of *Rhenish Industry*. It is there stated that to *one good vintage* there are estimated two of ordinary yield, two of poor crops, and one total failure: so that the hard labor in the vineyard is accompanied by never-ceasing anxiety of the owner for the result of his toil.

A table is given of the product of wine in the Rhenish provinces through a succession of 24 years, ending with 1842; and the quantity fluctuated between remarkable extremes—as, for instance, from a minimum of 14,674 *einurs* up to 854,000. The average of the 24 years was 359,058 *einurs*, or 5,385,000 gallons, as the production of 48,968 *morgens*, or 31,195 acres—being nearly 185 gallons per acre. In the twenty-four years quoted, two were average years, twelve were below and ten above the average.

It will be seen in another place that Mr. MOSHER, of Ohio, estimates at a higher rate than this the vineyards of that State. One acre of ground, he says, planted six feet by three apart, will contain about twenty-four hundred vines—consequently, will yield about one hundred and fifty (150) bushels of well-assorted grapes, which will make three hundred gallons of wine—sometimes a little more. “I give,” he adds, “three hundred gallons as the full average quantity of wine made to the acre in the neighborhood of Cincinnati.”

Dr. U. as has been said, rather prefers, for the New-York market, the *Isabella* to the *Catawba*; but says both have been improved by cultivation in the last fifteen years, *very much beyond what is generally believed*; and, though himself in the market as a vender of grapes, on a very large scale, is going on to extend his vineyard every year, and recommends it most strongly to others. More than four years ago he had twenty-two acres in grapes, having, after some years' trial, banished all foreign grapes from his vineyard, satisfied that they cannot be economically adapted to open field culture in our country, under ordinary circumstances. We understand the price of two-year old rooted vines, by the hundred, to be about 20 cents each; and that an acre set in them, all expenses told, will be about \$600; while in Ohio, Mr. Mosher says, the preparation of the ground for a *well trenched* vineyard, adding the cost of twenty-four hundred vines, at sixty dollars per thousand, or six cents each, for one-year old vines (the customary price in that market), with the cost of planting, will make the expense of

one acre, exclusive of land, stakes, &c. at least *three hundred dollars*; or, without trenching, about two hundred.

The positive and comparative excellence of the Catawba and the Isabella probably depend, in a great measure, on the care which has been bestowed on their improvement by cultivation, by different persons and in different places. While Dr. U. seems rather to give the preference to the Isabella, Mr. LONGWORTH, of Cincinnati, very high and respectable authority, is in favor of the Catawba, and has even discarded the Isabella altogether from his vineyard. He says, in a letter to the editor of the *Indiana Farmer*, paraded in the *Government agricultural paper* at Washington—"The Catawba grape is a good table grape, though not entirely free from a hard pulp; but as a wine grape, in our climate, I consider it *superior to all others*—capable to make a wine to rival the best hock and Champagne wines; and that Major ADLUM, in introducing it, has left a mine of wealth to the people of Ohio." The Isabella, he says, "succeeds better at the East than with us. I deem it a poor table grape, and worthless for wine, and have extirpated it from all my vineyards. With two pounds of sugar to the gallon, it makes a pleasant sweet wine."

If we can't find room in this, we will make it in the next No. to enter upon this subject, at least so far as to give ample information to all who have control of the smallest piece of ground—fully agreeing in opinion with Mr. HOARE, an author of the highest authority, that "of all the productions of the vegetable world which the skill and ingenuity of man have rendered conducive to his comfort, and to the enlargement of the sphere of his enjoyments, and the increase of his pleasurable gratifications, the VINE stands forward as the most preëminently conspicuous. Its quickness of growth—the great age to which it will live; so great, indeed, as to be unknown—its almost total exemption from all those adverse contingencies which blight and diminish the produce of other fruit-bearing trees—its astonishing vegetative powers—its wonderful fertility—and its delicious fruit, applicable to so many purposes, and agreeable to all palates, in all its varied shapes, combine to mark it out as one of the greatest blessings bestowed by Providence to promote the comfort and enjoyments of the human race."

Concurring in the foregoing eloquent eulogy on the grape, we shall not, however, look so much to foreign authors as to American experience for the instructions we shall offer, as that experience shows that in few things does the difference of climate exert a greater influence, demonstrating that European practice in the culture and management of the grape is not suited to our country.

We must content ourselves for the present with Mr. Mosher's letter on the establishment of a vineyard. Hereafter we shall supply the reader with the best information to be had on the culture of vines on a small scale for family use; and that information we shall dedicate to the housewife, by whom we verily believe it will be better attended to than by the *husbandman*.

From the Cincinnati Farmer and Gardener.

CULTURE OF THE GRAPE.

As public attention at the present time seems to be somewhat enlisted in the culture of the grape, and as its success is pretty well established in the vicinity of Cincinnati, where it is rapidly extending, a brief sketch of the most approved mode of establishing a vineyard may be acceptable to some of your readers.

The first step then, is the preparation of the ground. The sides or tops of limestone hills are generally chosen for the location, where the water runs off readily. South and south-eastern exposures are the best in this climate. Three modes of preparing the ground are

usually adopted here. The first consists merely in deep plowing, with a common plow, as for potatoes, and making the surface fine and mellow with the harrow. The second method goes one step farther, and a second harrow is cut in the bottom of the first; in the bottom of the second furrow a subsoil plow is run, which breaks the ground, altogether, to the depth of sixteen or eighteen inches; it is then harrowed and prepared as in the first. The third method is by thoroughly trenching with the spade, to the depth of not less than two feet. If the hill-side is steep, (say at an elevation of twenty or thirty degrees with the horizon,) terraces are also raised from two to four feet in height, and extending up the hill from twenty to sixty feet each, according to the acclivity of the surface. By this last mode, the top soil is all thrown into the bottom of the trenches, and the subsoil, which is generally clayey, thrown upon the top, and left sufficiently smooth for planting. Where stones are found in the soil, they are thrown out on the surface, as the trenching progresses up the hill, and if in sufficient quantity, are laid up in walls to support the terraces. The terraces are made to run horizontally along the hill side, or nearly so, with an open ditch for a drain at the upper edge of each terrace, and a similar horizontal ditch as often as once in eighty or a hundred feet, where the ground is not terraced. These drains should lead to the lowest point in the vineyard, where a suitable drain should be constructed down the hill to carry off the surplus water in heavy showers, and may be covered like a culvert, or left open. In each case the vines are planted in rows, four feet apart if to be worked with the hoe and spade, and from five to six feet if to be worked with the plow or cultivator, and should always run horizontally with the terraces and drains. The distance between the vines in the row varies from two and a half to four feet, according to the mode of training which is to be adopted.

Cuttings of the vine, with three or four eyes, are sometimes planted, at proper distances, in the vineyard; but the usual practice is, to plant them first in a nursery, in rows, about eighteen inches apart, and from four to six in a row, to strike root; here they are to be well cultivated, and allowed to grow one or two years, when they are taken up in the spring and planted out in the vineyard. The fourth year from the cuttings, (that is, after they have had three summers' growth—two in the nursery and one in the vineyard,) they may be allowed to bear a full crop, or nearly as much as they ever should be allowed to bear thereafter; which is about one-fourth of a peck of grapes to each vine. One acre of ground, planted six feet by three apart, will contain about twenty-four hundred vines; consequently will yield about one hundred and fifty bushels of well-assorted grapes, which will make three hundred gallons of wine—sometimes a little more. An acre of good ground, well trenched, and planted with Catawba vines, after it has acquired six or seven years' growth, may be made to yield a much greater quantity; and some small vineyards below Cincinnati, on the hills of the Ohio river, have produced at the rate of eight hundred gallons per acre; but the vines were planted four feet each way, making twenty-six hundred and forty vines to the acre; but the proprietor admitted that his vines were injured by overbearing, and that his wine was inferior in quality when allowed to produce that quantity.

I give three hundred gallons as the full average quantity of wine made to the acre in the neighborhood of Cincinnati. Of course, much variation will depend upon the manner of establishing a vineyard, and its subsequent treatment.

The comparative merits of the different modes of preparing the ground for a vineyard cannot, as yet, be settled by experience in this part of the country, as the oldest vineyard, I believe, has not been established more than twelve or thirteen years. Vineyards planted at Vevay, in Indiana, by the Swiss, merely on deeply plowed ground, failed in fifteen years. When the ground is plowed eighteen inches deep, it may bear tolerably well for twenty years; but a vineyard planted on ground well trenched two feet deep, and properly drained and cultivated, may be expected to last fifty or one hundred years—perhaps more. The crop, also, is much more certain when the ground is well trenched, not being so liable to suffer from drouths or rainy seasons.

The advantages of deep trenching have become so apparent to those who have had the most experience, that nearly all who can afford it are now preparing their ground in this manner, although done at an expense varying from eighty to one hundred and twenty-five dollars per acre, according to the character of the ground. This, with the addition of twenty-four hundred vines, at sixty dollars per thousand for one-year old vines, (the customary price in this market,) with the cost of planting, will make the expense of one acre, exclusive of land, stakes, &c. at least three hundred dollars, or, without trenching, about two hundred.

S. MOSHER.

LARGE FLEECE.—A specimen of wool from the Lincolnshire breed has been exhibited to us by Rev. Dr. LANG, inclosed to him in a letter from D. W. HORNE, Esq. of Jackson county. It was taken from a lamb of only a year's growth, raised by Mr. H., and for length and fineness surpasses anything we have ever seen. The sample shown us was *eleven and a half inches* in length, and from a fleece which weighed *ten and a half pounds*. There is no country better calculated for sheep than Florida, and yet very few of our planters keep enough even to supply their own tables with mutton. We hope to see things changed in this respect before long, and wool form an item in our exports.

[Tallahassee Floridian.]

THE "WHITE FRENCH GRAPE."

PERFECTLY ACCLIMATED IN PENNSYLVANIA.

Extract of a letter from JOS. C. G. KENNEDY, of Meadville, Pennsylvania, to J. S. SKINNER, Cor. Sec. of the Col. Horticultural Society.

I CANNOT let this opportunity pass without mentioning the existence of a *very fine variety of grape* in this section of our country. The vine was found by the early settlers of this region, in two or three places in Venango county, near the mouth of French creek, where Franklin is situated, where formerly stood a French fort. The French had at an early day a line of military posts from Fort Du Quesne (now Pittsburgh) to Canada. It is in the neighborhood of Franklin where the grape is found growing wild, or was so some years since; it is now cultivated in a few gardens. The grape is white, of large size, thin skin and fine flavor; in appearance resembling the white grape brought from the West Indies to your market, but larger. The vine, if of foreign origin, has become *perfectly acclimated, is very hardy, and a good bearer*. I doubt not it would prove a valuable acquisition if propagated more extensively and brought into notice. It was found, uniformly, growing on low grounds, and near water. I have heard its existence in these parts accounted for in this way, viz: during the occupancy of the military posts by the French, a keel-boat was at one time wrecked in the river near Franklin: that on board of her were grape cuttings or vines, destined for Canada; that those cuttings, lodging on an alluvial shore, took root, and thus the origin of what with us is termed "*the white French grape*." I am cultivating a few vines, which would have enabled me to say more concerning them and their produce, had not the nipping frost of 2d June destroyed their blossoms, an occurrence proving no tenderness, as the *white-oak leaves* in some places shared the same fate, and they are esteemed a *hardy plant*.

GERMAN PLOWS AND PLOWING.

How do these implements, used on the Rhine, compare with ours? BANFIELD, in his work just published, says—

Besides the large estates in the Grand Duchy of Darmstadt that we have already noticed as under scientific management, we may name the estate of Baron Von Babo, near Weinheim, as very accessible from Heidelberg. From Baden-Baden excursions may be made to Rothenfels and Augustenburg, country-seats belonging to the Margrave William of Baden, which have long served as pattern farms. Baron Von Babo is an author on agricultural subjects, and the result of a few out of numerous experiments that he has caused to be made with plows, will both show the interest with which intelligent farmers follow improvements in Germany, and will throw a useful light on the plow of the Palatinate, which we before praised as well adapted to the soil. One of these, with a plow in use on the Bergstrasse, a Flemish wheel, and a Flemish swing-plow, being tried against each other in a dry, stony soil, the result was—

| Plow used. | Depth of Furrow. | Breadth of Furrow. | Power used in draught. | Remarks. |
|---------------------------|------------------|--------------------|------------------------|-------------------------------------|
| | Inches. | Inches. | Cwts. | |
| PALATINATE. | | | | |
| (Ladenburg) | 6 | 9 | 4.9 | Furrow clean and clod well turned. |
| (Strasselnheim) | 6 | 9 | 3.3 | Furrow not clean or well turned. |
| BERGSTRASSE. | | | | |
| (Wiesloch) | 4 | 7 | 3.5 | Furrow shallow, well turned. |
| Flemish with wheels | 6 | 9 | 3.0 | Not so well run or turned as in the |
| Flemish swing | 6 | 9 | 2.7 | following, which was the best. |

The simple form of stating the results of the trial of various plows may afford a hint to Committees appointed to award premiums for American plowing.

TYPHOID PNEUMONIA.

BY ROBERT W. GIBBS, M. D. OF COLUMBIA, SOUTH CAROLINA.

At page 96 of the August No. we took the liberty to call on the author of the following dissertation on the peculiar diseases of the South and West, and there inquired—"Are not such questions intimately connected with the interests of Agriculture?" and we might have added, *humanity!* at least when that interest is viewed in the broad light that we understand and propose to discuss and defend it.

For a man thinking, as too many ever are, of swelling the current that flows and flows, and will, it seems, forever flow, from the old Atlantic to the South and West, what more interesting subject of inquiry than the diet, climate, and diseases connected with these lands of promise, and with any particular race or description of population?

Immediately after the above was written, and just too late to arrest it, we received the following, for which many of our readers, farmers as well as medical men, will unite with us in thanks to the author.

[The following article was published in October, 1842, in the American Journal of the Medical Sciences. It was copied into one of the agricultural papers of South Carolina, and, by request, has been revised and had some additions made to it for publication in the Farmers' Library:]

This disease prevails extensively during the winter months on our river swamp plantations in the Southern States. It destroys more negroes than all others combined, to which they are ordinarily liable. It is a matter of surprise that southern physicians have published nothing in relation to it. In the whole series of the American Journal of the Medical Sciences, there is but a single communication on the subject, and that is of an epidemic which prevailed in the West, and was confined chiefly to whites. I have for twelve years been familiar with this epidemic in the neighborhood of Columbia, and, having had a large number of negroes under my care, my experience of it is published with the hope of adding to the knowledge of its causes and treatment.

I would here premise that I am fully impressed with the conviction that the treatment of negroes must differ much from whites. The negro lives a life of constant exercise, and exposure to changes of weather; he uses a diet seldom varying, mostly vegetable; he has a fixed and certain amount of labor to perform; and he usually indulges in no excesses. The action of his system is more equable; his nervous power is more regularly distributed; and the various functions of the organs are less apt to be impeded than with whites, who live more or less irregularly. Negroes suffer more from the diseases of cold weather, and but little from heat; they are less liable than whites to inflammatory affections; inflammation is not so active, and is much more readily controlled, with them; they are more easily brought under the influence of medicine, hence their diseases are more curable. I speak of plantation negroes; those who are employed in domestic attendance on families and in cities, differing in their habits, have their complaints modified by their employments, and are assimilated more to the condition of the whites. Under similar circumstances, a single bleeding, followed by one or two doses of medicine, will control a case of acute pleurisy in a negro, while three or four times as much bleeding and treatment will be required by a white man of apparently similar strength. Negroes bear depletion badly, and stimulants well. The Thomsonian or stimulating steam practice agrees well with them, while it is injurious and destructive to whites. Opiates produce more decidedly beneficial effects on them, and much less injury or unpleasant consequences.

The disease of which I write is known by various names, according to the predominance of particular symptoms. The more violent cases being suddenly taken with a chill and cold skin, and dying often without any reaction, it is sometimes spoken of as the *cold plague*. The head being almost always affected, and be-

fore the pneumonic symptoms are developed, it is called *head pleurisy*; and symptoms of prostration and continued debility, with pain in the chest, and cough, being usually present, the term *typhoid pneumonia* is most commonly applied to it by physicians: in the fall or spring, when bilious symptoms exist, it is called *bilious pleurisy*.

It occurs mostly during the prevalence of long-continued cold spells, and more frequently with wet weather. It is rarely found on highland plantations, and if at all, is confined to such negroes as are more or less exposed to work in low and wet grounds. On swamp plantations the disease is epidemic; but as far as my experience extends, I have known but few cases on upland settlements.*

I have met with most cases in January and February, although it frequently commences in November and continues until spring. During the winter of 1841, the weather was unusually variable, with much rain, but so little intense cold that there was no ice continuing for more than a day or two, and none thick enough to be preserved. On the plantations in my charge, where there are about twelve hundred negroes, there were then fewer cases than usual—in all, probably, not over fifty—while during the next winter, on one place, among three hundred there were seventy-two cases, and on another, forty-seven among a hundred and fifty.

Old negroes, and such as are weak from any previous disease, are more liable to be attacked. Children under ten years are not often affected; yet I have known several cases of five or six years of age, where death has been sudden, with similar symptoms as in the adults; these have usually been such cases as the old women call *wormy*—children of weakly constitutions, who have suffered more than others from worms. When such children are attacked, they rarely recover.

Where the disease is violent in its attack, the patient suddenly becomes cold and pulseless, lethargic, and often insensible, without previous complaint; and I have known cases found dead, or die within three or four hours from being apparently well.

"Jan. 12, 1842. I was sent for to-day to see a case which I found in *articulo mortis*, January, æt. 32, strong and active; plowed yesterday until 12 M.: felt badly; had pain in head and chest; came home: was very giddy; skin cold and pulse very small and quick; sinapisms were applied to the extremities, and a blister to the chest; a dose of *ipecac.* was given to him by the overseer; he vomited freely, but no reaction came on. I found him at 11 A. M. with a cold skin, thread-like pulse, breathing quick; complained of pain over the eyes; *his intellect was perfectly clear*; tongue red at the edges, covered with a dry, brown crust; throat and mouth dry and parched, with sordes about the teeth; chest sounded clear over its whole extent; was powerless. Hot applications and stimulating frictions had no effect on his skin; carbonate of ammonia with whisky toddy had no influence on his pulse; he died at 6 P. M."

In this case the patient seemed to die from a direct prostration of nervous power; and the clearness of intellect was a remarkable symptom.

Jan. 30. I was called to a case taken late last night with chill and cold skin; pulseless; pain in head; lethargic; unable to move himself; he had sinapisms, stimulating frictions, pepper tea (infusion of capsicum): was dead at 10 A. M. when I reached him.

"Bob, æt. 35, was apparently well; about 12 M. said he felt cold and weak; the overseer sent for me a distance of seven miles; I reached him in about four hours; he was then dead.

Several other cases of the disease occurred on this place at this time, of mild form; others more severe occurred afterward; I did not for a moment doubt that he died from it. I have frequently been called to cases of twelve or twenty hours' standing, and found them dying.

"Nat, æt. 55, worked in the field and did his full task; came home in the evening well; sat by the fire and talked as usual; about 9 P. M. complained of feeling weak and cold; the nurse was not sent for: he was covered with blankets and remained, as was supposed, asleep until morning. I was called to see him; found him cold, insensible, pulseless. The nurse had given him warm

* During the past spring (1846) I understand it has prevailed on several upland places in St. Matthew's parish, S. C.
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pepper tea (which is much used on the southern plantations as a stimulant and diaphoretic); he swallowed with difficulty; I directed cataplasms of mustard and frictions of hot turpentine, with warm toddy internally. After a few hours, much against my expectation, he was roused; feeble reaction took place; his pulse never became full; I directed the toddy to be continued, with two grains of quinine every third hour. He improved slowly for several days, but continued very feeble; gained a little strength; was able to sit up for a short time; his tongue was red at the edges, with a dry, brown crust; became moist after three or four days; an occasional mild laxative was given him; but whisky, and quinine, and soup were constantly given. I considered him doing well, and slowly convalescing; no pneumonic symptoms, but a very slight cough appeared; a cold, rainy change of weather came on; on that night he had a chill, and died in a few hours."

Frequently have I known cases convalescent, able to walk about, free from all symptoms but debility, yield suddenly to a cold change of weather, and die in a few hours—or linger several days with pneumonic symptoms. If a case has been much enfeebled by a first attack, a second is very likely to prove fatal. A cold and windy change often aggravates symptoms which were mild and favorable. On one occasion I left five cases doing well, with no serious symptoms; a very cold, drizzling rain set in toward evening; on my visit next morning I found three of them with bad symptoms; one died on that day, seemingly of debility; the others were kept up by strong stimulants and large doses of quinine. One of them continued very feeble for several weeks; a large abscess formed on the leg, which was opened; it discharged very copiously, and exhausted her so much that she died next day, in spite of tonics and stimulants.

The following is a fair specimen of the severe form of the disease at its commencement, and is a good illustration of my view of the treatment required. I would here premise that I have known venesection practiced frequently in the cold stage, and I have never seen a case recover, and rarely even if used after reaction. I have heard physicians say, if they could get to the cases early, and bleed, the patients were generally safe. *Those cases which bear bleeding would get better without it.* On one plantation, a few years ago, the first five cases which occurred of this disease, commencing with pain in the head and chest, were bled by the overseer, who undertook their treatment; every case terminated fatally. He became satisfied that some other treatment was necessary. I was sent for, and introduced the treatment by stimulants, opiates and revulsives, and twenty-three cases which occurred all recovered. In this disease, if the patients are immediately attended to, it is found quite manageable, as much so as an ordinary catarrh; but beware how depletion is practiced; if the symptoms are neglected for twelve or twenty-four hours, and are at all aggravated, they are very apt to die.

"*Sunday, February 13th, 1842.* Bess complained last night of headache; did not sleep well; early this morning was seen by the nurse; was drowsy; complained of pain over the eyes; pulse was small and skin cold; whisky and infusion of capsicum had been given, and sinapisms applied to the extremities. I found her at 10 A. M. with skin cooler than natural, though not cold; is now sensible, but very giddy upon any attempt to raise her head; complains of severe pain over the eyes; pulse is small and irritable, 100 by the watch; feels very weak; tongue is red, looks like raw beef, very dry; breathing rather slow; no cough nor pain in the chest. I directed 2 grs. camphor, 2 grs. calomel, and 5 grs. Dover's powder every two hours, until three doses were given, and the whisky toddy to be given in small portions every hour, unless the skin became hot; and after three powders, if the skin was not so, to continue them every third hour until next day, with warm serpentaria infusion after each dose." "On Monday I saw her, and found her free from headache; had slept well; skin was in good condition, soft and natural; pulse 80. She took six powders; after the third she perspired freely, and the headache went off; her tongue was now moist and with a whitish fur; paler at the edges; feels much better, but is weak. I directed serpentaria and Epsom salts to be given this morning, and a full opiate at night. On the next day she was convalescent."

Such cases as this are very common, and, where the nervous power is soon roused, and its tone restored by opium, camphor, &c. and diffusible stimulants excite the circulation and restore free capillary action, *no pneumonic symptoms*

appear. Where the nervous system is in a depressed state, and an effort at reaction is unsuccessful, from a want of energy in the brain and spinal nerves, congestion of the lungs or brain takes place, which continuing, in the former gives rise to pneumonic inflammation; the vascular fullness arising altogether from nervous debility.

I consider typhoid pneumonia among negroes as an adynamic disease, in which *the nervous energy of the patient is directly debilitated by the sedative influence of cold.** If reaction take place, the nervous system must be braced up and kept steady, while such means are used to control local inflammation as will not reduce the general strength. The disease is, then, one of irritation, and not of inflammation. The blood is altered, and resembles bloody serum—thin, watery, and dark colored. The tendency to sink is so great that general depletion is highly injurious, and local bleeding must be practiced with great caution. Small doses of calomel, as a general alterative and excitant of the secretions, with camphor and opium, and, with much debility, carbonate of ammonia and alcoholic stimuli, producing diffusion, with free vesication, are the important indications required. Laxatives, and not drastic purgatives, aid materially in the treatment.

The following cases are examples of the mild form of the disease:

"Feb. 11th, 1842. Chance, æt. 13, complains of pain in the head, over the eyes; is giddy; skin dry, but of ordinary temperature; tongue slightly furred, redder than natural; no cough; pulse small, soft, quick, 130; breathing natural. I directed calomel 2 grs. Dover's powder 10 grs. camphor 2 grs. to be given, and repeated in two hours; each dose to be followed by warm infusion of serpentaria; as soon as he sweats, stop the powders; early to-morrow give him a dose of calcined magnesia."

"12th. Is much better; pulse below 100; sweated freely yesterday; slept well; pain in the head very slight; skin soft. I prescribed the continuance of the infusion of serpentaria, with 8 drops of laudanum every third hour until bedtime."

"13th. Is convalescent; pulse 80."

"Feb. 11th. Sally, æt. 11, has pain over the eyes; cough and pain in the chest; pulse small, 140, soft; nostrils run freely; breathing hurried; is weak and seems distressed. I prescribed calomel 2 grs. Dover's powder 5 grs. every third hour, with infusion of serpentaria; she had taken in the morning salts, which had operated three times."

"12th. I found her better; headache lessened; pulse 100; cough loose; expectorates freely; she sweat freely after three powders. Continue the same treatment."

"13th. Pulse 80; skin soft; slept well last night; feels very well but weak; cough loose."

Such cases constitute a large number of those which occur, and yield readily to small doses of calomel, combined with opiates and warm, stimulating infusions. In some of the cases there are no other symptoms than of debility and wandering pains in the back, loins, shoulders, or legs. Occasionally an acute pain in the ball of the eye, in the ears or side of the neck, with stiffness of the muscles, is present. In severe cases the tonsils, sub-maxillary and sub-lingual glands, are swollen, with acute pain in swallowing, and these are usually the worst. Where pneumonia becomes developed, the calomel and opiates are continued every third hour, for 36 or 48 hours, aided by the warm infusion of serpentaria and laxatives, with blisters to the chest; usually the symptoms yield in this time, although they sometimes run on for six or seven days; *this, however, is not often the case, unless depletion be practiced.* The hot skin and fever, with bloody expectoration, frequently induce the practitioner to draw blood; but it is usually thin and watery—looking more like a colored serum than blood, and resembling what is taken from dirt-eaters—having but little coagulum, and that loose and nearly black. The pulse, though frequent, and sometimes full in these cases, feels more as if filled with air than fluid, and is easily compressed—frequently it has the wiry, shattered feeling of anæmia. The blood expectorated is dark colored, and the expectoration viscid and tenacious; it is often of a bilious-looking fluid, which I consider a favorable indication.

* Since this article was written, I have had reason to believe that the *sedative influence of cold* is not the only cause. I have seen cases originate in warm weather, and am disposed to think that variations in the electrical state of the atmosphere deprive the nervous system of energy, alter the blood, and dispose to this disease. The electrical condition of the atmosphere varies with temperature and moisture.

Frequently the pulmonary symptoms yield suddenly, and a metastasis occurs; and this is another argument in favor of my opinion that this disease consists in irritation and irritability, affecting the nervous system continuously with its existence.

I remember one case in which the pulmonary irritation was very great for two days, with much pain and difficulty of breathing; suddenly a most intense pain, with great tenderness, attacked the peritoneal covering of the liver, and the cough and pain in the chest ceased. Five grains of calomel, twice repeated, followed by oil, gave relief, and no farther difficulty occurred—the girl convalesced directly.

Where metastasis occurs to the bowels, and hemorrhage results, the discharge is critical: when to the peritoneum, it is usually fatal; when to the brain, it almost invariably terminates in effusion. If much depletion is used in the treatment, the liability to metastasis is much increased, especially to the brain.

The cases require to be carefully watched, as they vary much in their course, although the primary symptoms are similar, and usually yield to the general treatment.

On two occasions, where the pulmonary symptoms subsided, and metastasis to the brain took place, with great congestion, I opened the temporal arteries, with temporary relief; but death by effusion followed soon after in both. The congestion was, no doubt, venous from weakness in the brain, and not arterial, which is connected with high action.

I do not think the distinction is sufficiently noticed between congestion and inflammation: in the former condition, the distension of the *veins*, with symptoms of diminished sensibility in the nervous energy of the organ, is the predominant symptom; in the latter, accelerated *arterial* action, with increased sensibility, is apparent. If the venous congestion is but temporary, and the nervous energy not much depressed, active inflammation occurs, when by reaction an effort is made by the arteries to repair the effects of the temporary delay of the circulation in the veins. If the nervous energy is free and cumulative, strong inflammation is the result. If congestion from a debilitating cause has occurred, and has remained long enough to oppress still more the vital energy of the affected organ, the weakened power of the arteries, when they receive the transfer of the load which reaction throws off from the veins, is such as to induce only a sub-acute inflammation in the organ. This state is removable by diffusion, diaphoresis and revulsion, at the same time that the nervous energy is restored, so as to prevent again the recurrence of the congestion, which would arise from its deficiency.

With the aid of nervous power, the arterial system repairs most of the injuries to the organs: if that is strong, too much action is developed by the arteries in this function; if they have but little aid from it, their effort soon ceases, they become rapidly exhausted, and effusion results. A proper balance can only be restored to the circulation by the regular renewal of the accustomed supply of nervous power.

That this disease may and does assume a different form, requiring different treatment, in other localities, I would not presume to deny; but here, where I have been familiar with it for a long time, and had extensive opportunities of studying its phenomena, I am satisfied that facts will bear me out in my opinion of its character. The type of this disease is that of *adynamia*; but, with a debilitated nervous system, local inflammation of a sub-acute character arises in congested organs: and it is all-important to remove the latter condition by such means as will not only not reduce the former, but support it. The symptoms in the attack are often such as would indicate depletion as necessary—such as pain in the head, giddiness, lethargy, &c.—but,

“Vascular energy is wholly derived from the nervous system. If, by any means, the nerves destined to supply any vessel or set of vessels with this energy become debilitated or destroyed, then these vessels cease to be capable of duly performing the function of propelling the fluids to and from the heart: and therefore it inevitably follows that turgescence, more or less severe, takes place, and results in disease, depending on the organ affected for its particular character.—Thus a sudden, temporary suspension of nervous energy in the vessels of the brain, rendering them for the moment incapable of propelling forward the blood, may occasion giddiness, dimness or distortion of vision, &c.; and, if these symptoms are neglected, this temporary becomes a lasting loss of energy, producing

either immediate death or a total suspension of vital power in the parts dependent upon the debilitated nerves."

The symptoms of debility, and especially the cold skin, point out to us the necessity of stimuli being required. The subsequent feebleness during convalescence—the extreme debility following the sanguine depletion in the cold stage of intermittents, with the very doubtful success of that practice, should make practitioners remember that the symptoms present may arise from a very opposite state of the system than one calling for blood-letting. I believe the pain in the head in this affection is neuralgic. I have seen it relieved in a few hours by laudanum, or camphor and opium; and I have often given quinine and whisky with advantage to it. The quick, soft pulse is one of irritation, not oppression, (as some consider it)—indicative of an irritable condition of the nervous system, and not an index of the amount of sub-acute inflammation in the lungs. The condition of the pulse alone will frequently mislead the practitioner (as it too often does in scarlatina), if he depends on it as a guide in diagnosis; and I have seen medical men differ in opinion about it, taking directly opposite views of the indications. The small, weak pulse is often considered as that of oppression, and the shattered thrill taken for wiriness and hardness.

The case which the venerable Dr. Parrish was accustomed to relate as having occurred while Dr. Wistar was in Edinburgh, here presents itself to me:

A dog was bled to death by him and other students. Just before he expired, an eminent practitioner stepped in; not being aware of what experiments were in progress, he was asked to place his hand on the dog's heart, and say whether the action was *sthenic* or *asthenic*? He did so, and declared the condition *sthenic*.

I have often noticed at the close of fatal diseases, especially in nervous constitutions, the action of the heart and carotids, and been struck with their apparent *sthenic* action for hours, when debility had been gradually increasing from steadily failing nervous power, and the system becoming progressively exhausted. In the disease of which I am treating, I have never known, in a single instance, the pulse to rise and fill out after venesection, or become slower, which should be the case if the frequency depended on inflammatory congestion. Often have I known it become smaller and more rapid; and I now never think of bleeding a negro in this disease. Where the pain is pleuritic, and the cough dry, which is sometimes the case, dry cups to the chest and free vesication usually give relief, with the full and free use of opiates. As I mentioned above, negroes bear opiates much better than whites, and seldom suffer from any of their bad effects.

My object in the preceding paper being to give a practical article, and to lead the profession to the notice of this disease, I have made no references to previous accounts in the books of similar epidemics in other countries. I differ from some of my professional brethren in my view of the treatment of this affection, and I can only say that my success in the treatment will bear me out in my opinions, whatever value may attach to the theory. During the winter of 1840-41, out of fully two hundred cases, there were only five deaths. My experience since confirms my satisfaction with the practice. I find that special attention by the planters to keep the houses of the negroes dry and well supplied with fuel, while they are well provided with blankets and warm clothing, has greatly diminished the number of cases on the plantations which I attend.

In conclusion, I would ask the attention of practitioners to an extract from Dr. Mott, who has had much experience in disease. He says:

"There is nothing more important in the walks of medicine and surgery than for the practitioner to make a distinction between two opposite states of the system" (irritation and inflammation); "and, if great opportunities of observation in various countries could authorize me to form an opinion, there is no fact more incontestably established than that the most fatal results in the practice of our profession are to be imputed to a total misconception of these lines of demarkation."

[*Travels*, p. 41.]

NOTE.—"Nurse" on a Southern Plantation.—The office of "Nurse," so familiarly referred to by the writer, and which he supposes every one understands, is one of no little responsibility and importance on a southern plantation. On all these of any considerable force and extent, a house of ample dimensions, and with all the proper appointments and appliances, is set apart as a regular infirmary or hospital. For the duties of a nurse (to reside in the hospital constantly), an

elderly woman, generally, but always one of the most trustworthy and intelligent, is selected and invested with all necessary power and authority. Much experience, under the guidance, in critical cases, of the best physician in the neighborhood, qualifies her to prescribe in all ordinary cases, with judgment and success, and in cases of more serious character, some near relative, as the mother of the patient, if a child, or the wife or sister of the man, if an adult, is, at the suggestion of the nurse, detailed to assist in the care of the sick. The hospital is kept constantly supplied with suitable medicines, and such materials for diet and drink as are suited to the common maladies of the country, and the exigency of the case. If more extraordinary and alarming symptoms supervene, a physician is sent for at the discretion of the nurse (if distant from the proprietor's residence), who will understand that forbearance to do so is not to be practiced at any risk to the patient. Calls are made in all cases of need, and without scruple, on the master, and more especially on the mistress, for anything in the way of nourishment or delicacy that the family stores can supply; and to withhold personal attention and sympathy would be an exception to the general practice and feeling of the country. Some of these nurses acquire wide and well-established reputation for skill and tact, and are often sent for and allowed to attend in the sick room of the most respectable families, especially in obstetrical cases; and for their services some of these colored women, slave nurses, derive in the course of the year considerable income—much more than white women laborers in Europe obtain from the severest daily labor throughout the year.

On one estate near Columbia, it came under our observation that at an early stage of pregnancy the women are required to refrain from field labor, to retire to their house, and yet every day, in good weather, to take a certain quantity of bodily exercise. We are persuaded that the system for the care and protection of the sick and disabled is in no country in the world more thoroughly arranged, or the provision more humane and complete than on the large plantations in the south. One rule on the estate to which we have referred, near Columbia, is to provide for them an abundance of warm clothing, and to have wood in such abundance at their doors as that it may be burnt at pleasure—leaving them no occasion even to remain stationary, much less to sleep in wet clothes.

This humane forethought on the part of Col. H. is worthy of all imitation, no less as an example of humanity than as an economical and the most effectual preventive of the Typhoid Pneumonia. It may be added that these particulars are derived in great measure from the slaves themselves, and from personal inquiry and observation. Returning, in April last, from the superb residence of Mr. TURNELL, near St. Francisville, we inquired of his driver "What house is that?" The answer was, "That, sir, is the hospital;" and he went on to say, that as soon as any, especially any of the children, were taken sick, they were sent to that house, to be looked after by master and mistress, as the cure of them would not be trusted to any one, even their mother, exempt from their personal watchfulness and attention. *Honor to whom honor is due.*

[Ed. Farm. Lib.]

THE NEW-ENGLAND FARMER.

WE heartily concur in what follows from *The Cultivator*, as to the *NEW-ENGLAND FARMER*. It is the first intimation we had of the discontinuance of, we believe, the third agricultural journal established in the United States. *THE AMERICAN FARMER*, at Baltimore, still flourishing in a green old age, being the first, *THE PLOUGH-BUY*, at Albany, by Southwick, being the second, and *THE NEW-ENGLAND FARMER*, now no more, the third.

Though we have not had the pleasure (7th July) to see a copy of "*THE HORTICULTURIST*," for which Mr. BRECK acts as agent at Boston, it is not to be doubted that with such Editor and Publishers it will be brought out, as to matter and manner, in a style to deserve extensive and lasting encouragement, and we sincerely hope it may receive it.

Mr. BRECK, Editor of *The New-England Farmer*, announces in that paper of June 24th, the discontinuance of that work, which has now completed its 24th year. This paper, from its commencement under FESSENDEN, has pursued the "even tenor of its way," with less change and greater steadiness of purpose than has attended almost any other periodical in the country.

Punctual in its weekly visits, cheerful in its tone, sound and discriminating in its advice, it

was always the wise counselor of the farmer; and we part with its "old familiar face" with sincere regret—regret that we shall receive its visits no more, and regret that, in the rage for new things, it should have been so far forgotten as to afford Mr. Breck, by whom it has been conducted with great judgment, so poor a reward as to induce him, as a matter of interest, to discontinue its publication.

IMPORTED STOCK.

DESCRIPTION OF THE STOCK RECENTLY IMPORTED BY THE MASSACHUSETTS SOCIETY FOR PROMOTING AGRICULTURE.

BY E. PHINNEY, ESQ. A TRUSTEE OF THE SOCIETY.

THE Trustees, with an honest desire of promoting the interests of Agriculture and improvement in the various branches of rural economy, had, for many years, devoted the income of the Society's funds to premiums on the best cultivated farms, on the various kinds of farm produce, farm stock, and to such other objects as they believed best calculated to promote the interest of the great body of farmers. Of the effect of their labors, the public can the best judge.

It seemed to the Trustees that very little progress had been made, particularly in the dairy stock of the country. They could point to no particular object, no decided mark of improvement or permanent change, upon which the future and progressive improvement of our dairy stock could, with any certainty, be calculated.*

Thousands of dollars have been offered and awarded in premiums for the best milch cows within the Commonwealth, during the last twenty years, and, as appeared to the Trustees, *to very little benefit*. Whoever has attended our cattle shows will have occasionally met with a cow remarkable for her milking properties, which the fortunate owner purchased from some drove. This *accidental* cow is exhibited at the cattle show; well authenticated proofs of her great yield of milk or butter are produced; the owner takes the highest prize, and puts the money into his pocket; the calf is sold to the butcher; and the cow the next year is put into the beef barrel. And this has been the beginning and the end of most of the

* We cannot, in justice to our own feelings, let pass an occasion so appropriate, without using it to express our sincere thanks, as an humble friend of American Agriculture, for the great services which have been rendered to its cause by the Trustees of this ancient and most respectable Association.

The propriety, not to say the demand, for this special acknowledgment will be better understood by the few readers who were in the habit, as we were more than twenty years ago, of noting their proceedings with a heartfelt interest in everything connected with the great subject of American Agriculture.

In all their dissertations and plans there was evinced a degree of sincere, intellectual, earnest devotion, which was calculated not merely to convey and to elicit practical knowledge and details on particular points, but to cause the best *men of the land to think and to reason*, as all men should learn to do who desire to understand, to influence, and to meliorate their condition in life, morally and politically.

No body can look back through their ancient archives without admiration and cordial union in the sentiment of gratitude to such men. But where is the token of public esteem and remembrance—where the legislative resolves of thanks and of medals—for these truly useful patriots—the Pickerings, the Quineys, the Lowells, the Parsonses, the Jaqueses, and a host of patriotic colleagues, whose thoughts and lives have been given to finding out and pointing out how more light and fruitfulness could be shed *on the course of the plow*?

Some French epicure has said that he who discovers a *new dish* confers more happiness on the human race than he who discovers a *new star*!—and, truly, our American men of influence, in and out of power, are far more ready to shower honors and fortune on the blood-stained conqueror, than to say "well done!" to those who have taught, however successfully, *the arts of peace and the principles of true liberty*.

What notice would a Republican Congress, representing the agricultural interest of the U. States, take of a man who should discover an effectual antidote to the Hessian fly, or a new fertilizer, ten thousand times more-concentrated and more powerful than even plaster or guano?—The same that they have done of poor Fitch, or Rumsey, or Fulton, or Clinton, or Whitney, or Buel, or Lowell! *So goes the world! but we are a wise, a wonderful people!* [Ed. F. Lib.

native cows to which the highest prizes have been awarded. The writer knows not a single instance where the offspring of any one of these high-premium native cows has inherited the valuable properties of the dam in a sufficient degree to induce the owner to raise it, with the exception, perhaps, of the famous Groton cow, whose descendants, in the hands of Colonel Jaques, might have added greatly to the value of our dairy stock, had the Colonel possessed the means of carrying out his plans; and, in this instance, the valuable properties of the dam were transmitted to the progeny solely by the means of crossing with the pure breed of a foreign stock. The cautious farmer will not run the risk, nor incur the expense, of raising a calf from stock, of the origin of which, and of the blood of the various breeds that runs in the veins of his favorite cow, he knows nothing. Acting from a belief in the truth of the old adage, which has been taught him from his youth upward, that "a good cow *may* have a bad calf," he can have no assurance that the descendant of his native cow will not take its character from, and inherit the inferior properties of, some near or more remote ancestor. He had rather take his chance in the next drove that comes along, knowing that he shall at least avoid the expense and trouble of rearing a calf upon whose good properties he can make no certain calculation. Now it will hardly be pretended that the offering and awarding of premiums for this description of cows has, or ever will have, the effect to improve the dairy stock of the country.

The writer would by no means detract from the value of these accidentally good cows, the natives of the country. There are, no doubt, to be found, among the farmers of Massachusetts, many cows of native origin, possessing as valuable properties for all purposes, except for breeding, as any that can be imported from abroad. And they are not without their value as breeders, where they and their descendants may be crossed with the pure blood of some long and well established race of foreign animals. In this way we may chance to perpetuate the rare qualities of our native cows, united with the well-established traits of character of the imported stock.

It may be contended that we need not the aid of foreign stock to raise up one of the best breeds of cattle in the world. This may be true; but who will undertake it? What individual farmer has the patience, the skill, the intelligence, and the capital to engage in a task that will require many years and much capital to bring to any considerable degree of perfection? And where would be the propriety or the economy of undertaking a work of this kind, when, by a little extra expense at the commencement, we may find the work already done to our hands?

Many farmers in this part of the country, though depending principally for their income upon their milk cows, are not aware, it is apprehended, of the small produce derived from them; and would, no doubt, be surprised on learning that their cows generally do not yield an average daily produce of more than from two to four quarts of milk for the year.

The average price of milk for the year, when drawn from the cow, will not exceed three cents per quart, either for the purposes of manufacturing into butter or cheese, or to sell in the market.† Let the farmer set off the expense of keeping against his six or twelve cents a day income from his several cows, and he will see but a small chance of acquiring wealth from the income of his dairy. But let him have a stock that, with the same keeping, will yield a daily average produce of six or eight quarts of milk, and he will find the produce of

* Enough of them, if they can be *assured* of remunerating prices, but not if there should prevail a general apprehension that, when such stock is needed, either individuals or societies will continue to send abroad to procure them.

[*Ed. Farm. Lib.*]

† In New-York, and the neighborhood, the price varies. Milk is brought more than a hundred miles by steam; some sell on their farms, in the vicinity, for 2½ cents a quart—but they sell honest milk from the cow, before the pail goes to the pump. Others prefer to take or send their milk to town, and there the price varies in a remarkable manner. Those who sell to the hotels in large quantities, and to few customers, are content to get 4 cents, while others, who are known to sell the genuine article, have their old established customers, from whom they get 6½ cents a quart.

One farmer—a most industrious, practical, economical, and exemplary man—Mr. TOWNSEND, senior, from a farm of 130 acres, sells, for one item, \$1,200 of milk.

In the country around Philadelphia the farmers are getting in the way of retaining their milk, and converting their cream into *ice cream*, which they send and sell, in large quantities, in the common market, and find it very profitable. We are not aware that this practice prevails, or to what extent, with farmers in the neighborhood of other cities. The price, we believe, of genuine ice cream is rarely less than 50 cents a quart.

There are so many devices, "by hook or by crook," to get the farmer's money out of his pocket, that it is well if he can sometimes hit upon some experiment that will bring him more directly *in contact with the consumer*, and so save the commissions to the go-between, which are always taken finally out of the first producer, as is found when the transaction is *sited* to the bottom.

[*Ed. Farm. Lib.*]

his dairy, which before gave him hardly enough to pay for the feed of his cows, now affording him a net profit, which will more than meet the extra expense which he may incur in the purchase of his improved breed of cows.

It may be said that the expense of keeping the improved breed will be greater than that of the native cows. This may or may not be the case. But the question with the farmer should not be, which will require the most food? but rather, which will give the greatest net profit on what they consume? It is the greatest capacity which the animal possesses of converting her food to milk, which ought, in the estimation of the judicious farmer, to constitute her relative value.

It was with a view of introducing among our farmers a dairy stock that should, with proper care and management, remunerate, and more than remunerate, the expense of keeping, that the Trustees were induced to appropriate so considerable a sum to this object.

What they have now done forms but a nucleus or starting point, from which, with the aid and countenance of a liberal public, they hope in due time to diffuse among the farmers of Massachusetts, not only an improved race of animals, but also an ambition to excel in every thing that relates to this important branch of rural economy.

The breeds of cattle which the Trustees believed, under all the circumstances, to be best adapted to this country, best calculated to promote the object they had in view, and to subserve the wishes and wants of the farmer, were the Ayrshire and North Devon.*

The Ayrshire cows have been, for nearly or quite a century, distinguished as deep milkers, and at the same time are known to be a hardy, mild-tempered, and docile race, easily kept, with a disposition to fatten when not in milk, and having a capacity of converting their food to milk beyond that possessed by any other breed of cows in Great Britain.

The venerable Aiton, who may be justly styled the pioneer and champion of improved husbandry in Scotland, and particularly of that branch which relates to dairy stock, says: "The Ayrshires are the most improved breed of cattle to be found in the island, not only for the dairy, in which they have no parallel, under similar circumstances, but also in feeding for the shambles. They are, in fact, a breed of cows that have, by judicious selection, cross coupling, feeding and treatment, for a long series of years, been brought to a state of perfection which fits them, above all others yet known, to answer in almost every diversity of situation where grain and grass can be raised to feed them, for the purposes of the dairy, or for fattening them for beef."

In the dairy establishment of Mr. Harley, at Glasgow, consisting of 150 cows, they were principally of the Ayrshire breed, to which he gave a decided preference over any other breed. The average quantity of milk given by the cows in his establishment, for the year, was eleven quarts per day from each.

In the famous dairy establishment kept by Mr. Rhodes, near London, of 400 to 600 cows, "he had tried the Ayrshires, to the number of 150 at a time, and by him they were highly approved—affording a large quantity of rich milk—fattening in a very short time, when they left off giving milk—and producing beef which was more highly valued, and sold for a higher price in the market than that of the Short-Horns."

Aiton asserts that many of the Ayrshire cows, in their best condition, and well fed, will yield at the rate of 1000 gallons of milk in a year, or over ten quarts per day. Rankin, however, states his opinion that Aiton had given the daily average produce too high, and thinks that few herds of twenty cows or over will average more than eight hundred and fifty gallons, or about nine quarts per day. He also states that he had seen thirty-six quarts of milk drawn from a cow in one day, and that he had a three-year old quay that once for six weeks after calving gave twenty-eight quarts per day. The dairymaid predicted that "there had been o'er-muckle talk about her for only luck to come of her," and he states that she soon afterward received an injury which caused one of her quarters to become dry of milk.

The characteristic points of the Ayrshire cow, when Aiton wrote, were: "Head small, but rather long and tapering at the muzzle; the eye small, but smart and lively; horns small, clear and crooked, and the roots at considerable distance from each other; neck long and slender, tapering toward the head, and no loose skin below; shoulders thin; fore-quarters light; hind-quarters large; back straight; broad behind; joints rather loose and open; carcass deep, and pelvis capacious and wide over the hips, with round, fleshy buttocks; tail long and small; udder capacious, broad and square, stretching forward, and neither fleshy, low hung, nor coarse; the milk-veins large and prominent, teats short, and all pointing outward; skin thin and loose; hair soft and woolly."

* Which, as we have elsewhere said, might be had as pure, as large, as well-formed, and as beautiful, of Mr. George Patterson, in Maryland; of Mr. Allen, as we suppose, near Buffalo; in Connecticut, of the Hurlbuts; and elsewhere in the United States, as in England, or the world besides.

We happen to know of a North Devon bull, bred by Mr. Patterson, which has taken several premiums, never failing in any case when exhibited—3 years old last winter, and equal in blood and appearance to any, probably, in England—perfectly gentle and home-staying—that may be had, near Washington, for \$100

This is an accurate description of the Ayrshire stock imported some seven or eight years ago by the State Agricultural Society. The improved Ayrshire stock of the present day, which are descended from the famous *Sandy stock*, and of which the recent importation by the Society consists, differ in some respects from those above described by Aiton. The head is shorter, wider between the eyes and horns, thinner in the fore-quarter; the shoulders finer and more closely set; the limbs and body shorter, and the joints more closely and firmly set; the abdomen deeper and more capacious; the udder broader, the milk-veins more prominent, and the teats hanging directly down; hair longer, though more silky, and finer in the handling; and are altogether a harder race of animals than the Ayrshires of former days.

"The color," says Robertson, "is generally a brown of many hues, from dark to yellow, intermixed and mottled in many a varied form and proportion with white; almost none are of one color. In a herd of forty or fifty, there will no two of them be alike in color—in this respect exhibiting a diversity not unlike a bed of tulips, and of as many hues and shades, in an endless variety of beauty."

The North Devon stock has long been celebrated as a breed of cattle beautiful in the highest degree. For the dairy, they cannot be considered equal to the Ayrshire; but, viewing them as milking the three qualities of working, fattening, and milking, they may be considered as unrivaled. Some of the writers upon English stock give them a high rank as milkers, and Mr. Conyers, of Capt Hill, near Epping, a district almost exclusively devoted to the purposes of the dairy, preferred the North Devons, "on account of their large produce, whether in milk, butter, or by suckling."

"The North Devon oxen," says an English writer, "are unrivaled at the plow. They have a quickness of motion which no other breed can equal, and which very few horses exceed. They have also a docility and goodness of temper, and also a stoutness and honesty at work, to which many teams of horses cannot pretend."

Such is the character given of the breeds of cattle (a bull and four cows of each) which the Society have imported with a view of improving the stock of the country; and in order that there should be no mistake or disappointment as to the character of the respective breeds for purity of blood, and with a view of obtaining the best animals upon the most reasonable terms, the Trustees decided on sending out an agent for the purpose of making the selection. And accordingly, Mr. Alexander Bickett, of Lowell, a gentleman of intelligence, and an excellent judge of cattle, who had resided for some years in Scotland, and personally known and highly respected by most of the owners of distinguished herds of cows in and about Ayrshire, was engaged in July last to proceed to England and make the purchase. Mr. Bickett had, within a few years past, attended some of the cattle shows in Scotland—had noticed the best stock, and knew where he could place his hand upon the best cattle in the country.—The acquaintance of Mr. Bickett with the respective owners enabled him to treat with them upon terms much more favorable to the Society than could have been done by a stranger.—The four Ayrshire cows and the Ayrshire bull, selected by him, are probably equal, if not superior, to any other five cattle that could be purchased in Scotland. They are all descended from the purest and best blood of the Ayrshire stock, as will be seen by the pedigree given of them.

In the selection of the North Devon stock, Mr. Bickett applied directly to the Earl of Leicester, from whose beautiful herd of North Devon cows he hoped to be allowed to make the purchase. When it was made known to the young Earl that the stock was wanted for the Massachusetts Society for Promoting Agriculture, he generously and very readily fell in with the views of Mr. Bickett; and, possessing all the kind feelings of his father, the late venerable Earl of Leicester, toward the people of this country, he allowed Mr. B. to select from his flock, at a very moderate price, a cow and three beautiful heifers, all in calf by one of the most celebrated North Devon bulls in the country. The Earl having no bull that he could part with, he recommended a young bull of Mr. Blomfield, which Mr. Bickett succeeded, after much importunity, in purchasing.

The cattle were all shipped at Liverpool, about the first of September last, and arrived in Boston about the first of October. They were attended on the voyage by Mr. Bickett, and with so much care and fidelity on his part that no injury happened to them, and they were in as fine condition when landed in Boston as when put on board the ship at Liverpool. The North Devon cow calved on the passage from Europe, and the three North Devon heifers have calved since their arrival—the four calves furnishing a fine specimen of this beautiful stock.

The appearance of the cattle on their arrival in Boston was very gratifying to the Trustees and all who saw them, and such as was highly creditable to the skill of Mr. Bickett, and to his indefatigable care and attention to them while on shipboard.

The cattle, on their arrival, were placed under the care of the subscriber, at his farm in Lexington, where the public are respectfully invited to call and view them.

* Obligated to be economical of our space, we are compelled to omit the *pedigrees* of these imported cattle—which, if copied as they appear in this Report, would have occupied several pages. This, however, is the less important, as the owners of their progeny will hardly have occasion to trace them up beyond their imported progenitors.

From the Albany Cultivator.

FARM ACCOUNTS.

Mr. Editor: I observed in your January number, a form for keeping farm accounts, presented by E. V. W. Dox. Allow me to present one which I have used for the last two years, and which I find very simple and convenient. My system in regard to naming the lots is similar to that of Mr. Dox, only I prefer letters for this purpose, and use figures to designate the subdivisions, for it is found very convenient to divide each lot into two, three, or four smaller parts, in order that a separate account may be kept of each sort of grain. The complete account of these subdivisions may afterward be so arranged as to exhibit the account of the lot which they comprise. On the first page of the book should be an accurate map of the farm, with the title of each division and subdivision, and the number of acres in each. But, for the form:

| MAY. | Man's Work. | Horse's Work. | Weather. | Remarks. |
|------|--|--|-----------------------|--|
| 5 | $\frac{3}{4}$ d. plow B. 1; 1 d. cart manure D. 3; $\frac{1}{4}$ d. repair fence | (1st) $\frac{3}{4}$ d. plow.....
(2d) 1 draw 12 fds ma. | Pleasant—S. wind..... | Commence draw manure; turned cows into past. A. |
| 6 | $\frac{1}{2}$ d. plow B. 1; 1 d. cart manure..... | " 1 d. draw 15 loads manure..... | Fair—warm..... | B. 1 plowed, $3\frac{1}{2}$ days; apple blossoms appear. |
| 7 | 1 d. cart manure, $\frac{1}{2}$ d. spread manure, $\frac{3}{4}$ d. plow D. 3.... | (1st) $\frac{1}{2}$ d. plow.....
(2d) 1 d. cart 14 fds ma | Fair—warm..... | Commence plow D. 3; very dry; man're rid, 41 fds on 2 ac. |
| 8 | 1 d. plow D. 3; $\frac{1}{2}$ d. spread manure; 1 d. harrow D. 3. | " 1 d. harrow.....
(1st) 1 d. plow..... | Cloudy and warm..... | D. 3 plowed 15 days.
" harrowed 1 day. |
| 9 | $2\frac{1}{2}$ d. plant corn D. 3..... | (2d) 1 d. harrow..... | Pleasant..... | Commence plant corn. |
| 10 | 1 d. plant corn; 1 d. harrow B. 1; $\frac{1}{4}$ d. sow B. 1..... | | Cloudy and cool..... | Sowed B 1— $8\frac{1}{2}$ bush. oats. |
| 11 | 2 d. plant corn..... | | Very warm..... | Corn planted, $5\frac{1}{2}$ d; $\frac{1}{2}$ b. seed. W. $\frac{1}{2}$ ac. s'd steep'd in sltpr |

This account should occupy two pages of a common quarto or folio book, and for convenience, these pages should be opposite one another, so that they may both be open to the view at once. The weather column and column of remarks will thus fall on the right hand page.

In the column of horses' work you see I designate my teams as 1st and 2d. The farmer by practice will find that he may use many abbreviations which will facilitate the making of his daily entries. In this form are no names to be written every day, as in Mr. Dox's form, but merely an entry is to be made in the column of "Man's Work," of the time and

There is no herd-book in England, we believe, except of the improved Short Horn cattle. The wide extent of our country, and the carelessness of our breeders, will render it difficult, if not impracticable, to keep a reliable one in the United States—though a very promising commencement has been made by Mr. L. F. ALLEN, of Buffalo, in his AMERICAN HERD-BOOK, which shall receive, as it deserves, a more particular notice. The undertaking could not have fallen into better hands.

As one instance of the difficulty of getting and keeping up a complete list, we have looked but for a single cow—an imported short-horn, that has given 38 quarts at a milking—SORBY, property of George Law, Esq. of Baltimore. We do not find her on the list, though the search was a hasty one.

The owners of the descendants of this imported stock, at Boston, will have to trace them up to the *Ayrshire* bull, "PRINCE ALBERT," and to the *Ayrshire* cows, FLORA McDONALD, and JEANNE DEANS, and MIRLEY, and CHARLOTTE. No name, that we can see, is given to the *Devon* bull. He was got by "QUARTLY." The *Devon* cows and heifers are—"Cypris," by Spencer, dam by Denny, g. dam by Sampson, and served by Derby, in January, 1845; "Honeymoon," by Quartly, dam by Denny, g. dam by Sampson, served by Derby, April, 1845; "Stella," by Quartly, dam by Denny, g. dam by Sentinel, put to the bull, Derby, in January, 1845; "Jasper," by Quartly, dam by Denny, g. dam by Sentinel, put to the bull, Derby, in January, 1845.

It will thus be seen that all were in calf by the same bull; and that, if they rely on the imported bull, hereafter, to breed from, he was got by the sire, and is, therefore, half brother to Honeymoon, Stella, and Jasper. If any one interested in this stock, however, should express a wish to have the fuller statement as to these animals, registered in this work, they shall be gratified. In the mean time, the Society and the community may be congratulated that these fine cattle should have been favored with the care and management of one so widely known for enterprise, skill, and common attention to such matters, as is E. PHINNEY.

{*Ed. Farm. Tab.*

labor. If you have a boy in your employ, you may readily reduce his labor to man's work, and enter it in the same column.

The column of "Horse's Work" is quite essential. By this you may not only know the kind of labor your horses perform each day in the year, and the number of days they are employed, but having kept an accurate account of their expenses, you may readily calculate what each day's labor has cost you, and consequently know how much each grain account is debtor for their work. Few farmers, I apprehend, have a correct idea of the cost of horses' labor, and yet a farm account must necessarily be quite imperfect without such knowledge.

Next is the weather column. The weather has so much influence on the growth and product of the farmer's grain, that he cannot help feeling a lively interest in keeping this column, especially as it costs him so little extra labor. He has, moreover, the means of knowing what was the weather at any particular season, or any day of the year, and by a comparison of the weather column of "Remarks"—for in this last he should note how the crops thrive—he may learn the exact effect of almost every change of weather on the plants at those particular stages of their growth, and thus he will learn more thoroughly the physiology of plants, and will be enabled, perhaps, in some respects, to profit by the knowledge thus obtained.

The last column is for "remarks on the state of the crops," &c., and it may be used to make memoranda of various events connected with farm operations, which would otherwise be forgotten.

Once a year the farmer should post into another book, or perhaps on the last pages of the book posted, a complete Dr. and Cr. of each crop, a Dr. and Cr. of "stock account," (including new buildings, &c.) a "fuel account," "horse account," &c. &c. In short, a farmer should ascertain by his books whence comes his profit and whence his loss, and learn, from the same, to increase the former and avoid the latter.

Yours, &c.

Covascion Springs, Smithfield, March, 1846.

G. DE WITT ELWOOD.

THE SORT OF SHEEP FOR OUR MOUNTAINS.

ASHVILLE, N. C. 7th August. 1846.

My Dear Sir: I this day received THE FARMERS' LIBRARY, and proceed to answer the inquiry, about sheep, made by your correspondent. I consider the ridge of mountains running through Virginia and North Carolina particularly well suited for sheep husbandry, and the principal obstruction to its being carried on profitably is the want of fencing. The elevation is in no part too great for the Cheviot sheep, which in my opinion are better suited than any other: they are active and hardy, requiring less care and attention, and they will endure more hardship and feed themselves in snow by scraping it away with their feet, and thereby feeding themselves where the more tenderly brought-up sheep would perish. Even on the top of the Black Mountain, in summer, the sheep feed well and thrive; and I know no ground better fitted for feeding sheep than the Bald Mountain in this State.

As to fencing, I have agreed for putting up 12,500 rails at 6½ cents per panel of 10 rails, and can get any number put up at that price, and for which they are well paid—only it requires them to cut the rails as near as possible to the line of fence. Otherwise the hauling has to be added [at their expense, we presume the writer means]. Until the ground is fenced in, it is, in my opinion, quite useless to attempt feeding sheep; twenty shepherds could not attend to 600 sheep on the mountains; unless fenced in they will wander off and never return; and among under-brush who could watch them? Once fenced in, and part of the ground cleared for giving some food for winter—as hay, or rowen, which I consider better still, with some rape, which I prefer to turnips, as easier cultivated, a better crop, and a hardier vegetable, and one which sheep are fond of and thrive well on—I see nothing to prevent any person, with tolerable care and attention, from feeding sheep. I apprehend little danger from wolves—much more from dogs; but either can be disposed of with some strychnia, and which I would have no hesitation in using, if annoyed by either. I have been told if I did so the whole country would be up in arms on account of having their dogs destroyed; but I see no reason in any man keeping dogs to injure his neighbors' sheep or property. I consider this range of mountains far preferable to the prairies of

the west, particularly for winter feeding. You are aware that I did not succeed in my first attempt at sheep feeding; but that I consider owing to the grossest neglect in my absence in Pennsylvania. But what sheep I have now are doing almost as well as I could wish, requiring little care. I consider that sheep should yield 3 lbs. of wool each, worth 20 cents per lb. and each ewe a lamb worth half a dollar; so that each ewe would, all things considered, yield a dollar yearly. Wethers or widders would produce as much, from the additional wool they will produce and the increase in value for mutton; they can be driven a great way to market, at a small expense, to the eastern cities, and where I believe any quantity could be profitably disposed of. I intend increasing my present stock, as I find I can do it with advantage, having the ground fixed to answer it, and I feel satisfied that for the capital embarked and the care required, nothing would pay better. I think you will admit I have put down the quantity of wool and price at a low figure. I think, all things considered, if a person was once well fixed, sheep could be fed in this district at a quarter of a dollar a head, all expenses included—not certainly if they get over-high priced shepherds, put up handsome and expensive sheep-houses and one hundred other things they don't require in this country. In Scotland, where the snows are deep in winter, and lie for a long time, it is rarely they lose their sheep—I mean the Cheviots; they are a hardy, thrifty animal, and could live the winter through here, five years out of six, except the flocks were very large and the bounds small, with little or no winter food, such as turnips or hay—with both they would no doubt be better.

I think I have given all the information requisite. There is another thing to be guarded against: that is, choosing a laurel district: for in winter when the ground is covered with snow, and also the lambs are subject to eat of it, and although there are many effectual remedies, if applied in time, the chance is, they will not be discovered in time to save their lives. Folding at night I consider unnecessary and rather injurious than otherwise. If there is any farther information I can give you, it will give me pleasure. If your friend wishes to import Cheviots, I can put him in the way of doing it safely—I mean without his running the risk of his being taken in. I would recommend the importation of a few bucks and half a score of ewes, and crossing the native ewes with the Cheviot bucks. From all I have observed, the last winter has been the severest there has been here for twenty years, and from all the information I could collect, I feel no doubt in my mind, that very little winter food is necessary here for sheep in general. They suppose here they can do in winter, like the bears, without food, from all they provide for them, as far as I have observed.

Believe me yours, truly,

W. MURDOCK.

We apprehend that our friend has allowed rather a high price for Cheviot wool. A person embarking in the business would probably do well not to count on more than 15 cents, one year with another. Col. Hampton, of South Carolina, has a flock of about 700, which are *never fed*, and he kills as fine mutton as ever graced the table of a Lord Mayor.

[Ed. Farm. Lib.]

INDIAN CORN IN IRELAND.—The Dublin correspondent of the Morning Chronicle says: "The use of Indian meal has now become quite general throughout the country, and the people prefer it to the potato, the enormous price of which, for some months past, had placed it beyond the reach of the laboring classes. One good effect of this change in the food of the humbler classes is a reduction in the price of potatoes, both for seed and for immediate consumption."

As Indian corn, says Hayden, has lately been imported largely into Ireland, it may not be uninteresting to give the following a place here:

"THE NUTRITIVE PROPERTIES OF INDIAN CORN COMPARED WITH THOSE OF THE POTATO. Proportion of nutrition in 100 parts of potatoes, 24; proportion of do. in Indian corn, 88 proportion of water in 100 parts of potatoes, 72; proportion in do. of Indian corn, 9."

CULTURE OF THE ENGLISH WALNUT.—Mr. WM. JENISON, of Cambridge, Mass. thinks the culture of the English walnut would be a lucrative business for the farmers of Pennsylvania, Maryland and Virginia. He states that he has known a single tree to produce 24 bushels in a season.

[Albany Cultivator.]

TABLE FRUIT.

FILBERTS.

Is there any good reason why this excellent nut, so welcome as a part of every dessert, should not be added to the list of our domestic productions? In Kent, England, there are extensive and profitable *orchards of filbert-trees*—the cultivation of the tree being there well understood. This consists much in proper *pruning*. The filbert, says a writer in the Journal of the Agricultural Society of Scotland, is but an *improved hazel*—the latter being the wild original to the former, as the crab to our improved apples. The filbert being an accidental variety, produced by cultivation, cannot be certainly propagated or reproduced by sowing the nut—that is the seeds; for not one in ten of the plants raised from seed would prove filberts, but common hazel-nuts only. To insure the true variety, says the same writer, the young trees should be raised from *layers*, and these, after being rowed out in nursery order for two or three years, in which time they are trained to one upright shoot of not less than three feet high, all suckers and branches on the lower part of the stem being constantly removed.—The trees, says the same writer, after being planted in their final stations, are headed down to about eighteen inches from the ground. This hight will admit of a clear stem of about 12 inches below, and which part must be ever afterward kept clear from shoots. This removal of shoots and suckers will cause the buds at top to shoot with greater vigor. If, according to the directions of this writer, eight strong shoots be produced in the first summer, they must be carefully preserved, as that number will be required to form the head: but if less than this number come forth, then two or three of the strongest must be shortened back to half their length at the next pruning, in order to obtain the requisite number.

A sufficient number of branches being obtained, if not in the first, certainly after the second pruning, they are to be carefully preserved and trained outward and upward into the due position, to form the permanent branches. In England, the branches are allowed to rise to the hight of four feet—never higher: and the middle of the tree, or rather bush, is always kept free from shoots—so that a well-trained head resembles a large bowl.

It is added that the easiest mode to give the tree this shape is by using a hoop of the proper size, placed within the shoots, and to which the limbs are tied at equal twelve-inch distances, in divergent order: and this may serve as a practical hint for giving that or other form, where it may be desirable, to other trees or bushes, either useful or ornamental. Such lateral and curving position may be assisted by a careful pruner always cutting at an outside bud, which, when prolonged, first outward, naturally turns upward into the due position to form permanent branches. In our country, however, it would be sufficient to restrain the tendency of these *stolon* plants (so called from their tendency to increase themselves by numerous suckers from the roots) to run into too much wood, by depriving them of their suckers, and thus induce a stronger expansion (as is done with other fruit-trees) of the fructiferous branches.

We are not aware of the grocery-store prices of filberts.

Being visited at the instant of writing thus far by a bevy of ladies, to go and walk over the classic grounds about old Fort *Ticonderoga*, we begged to be ex-

cused on the ground of having indulged there in solitary meditation before breakfast: but would accompany them on condition that any one of them (some being first-rate house-keepers, as we knew, if one might judge by the cleanliness of their establishments and the luxuries of their tables) could tell the *prices they were giving at home for filberts!* when, *mirabile dictu*, they "did not know, but thought it was a quarter and a fippenny bit a pound!" So we got off, and will proceed only to say that it is not in this, and in many cases like it, that we would inculcate home cultivation, merely or even in great part only for *profit*; but to cultivate and gratify that taste for fruit culture, and arboriculture generally, which every right-minded farmer should cherish in himself and his family.

HICKORY-NUTS, BLACKBERRIES, &c.

Is any sentiment more natural or worthy of encouragement than the pride which every gentleman agriculturist may be supposed to feel in having it in his power to say to his guests that the most luscious fruits and the choicest nuts on his table—the grape, the apricot, the pear, the melon, the peach, the almond, the filbert, and the hickory-nut—are from trees of his own rearing, improved by his personal care and his skill? We have before remarked on the wonderful congeniality of the north side of Long Island to the *growth of trees*. In the orchard of Judge Mitchill at Plandome, are the most thrifty and vigorous *hickory-nut trees* we have ever seen, from nuts which he brought some years since from Pennsylvania; and if we are not deceived by a very bad memory, they are beginning to bear in twelve years from the nut. Such is the effect of transplantation and regular culture, in a friendly soil. For taste and skill of this sort, so indicative of fine feeling and a character above the common order, few were so much distinguished as the late General T. M. FORMAN, of Rose Hill, on the beautiful shores of the Sassafras River, in Maryland.

We have somewhere a memorandum or list of the *great variety* of trees growing, in the finest health, at Roswell House, residence of R. L. COLT, Esq. at Paterson, New-Jersey. We shall publish it some day for the sake of those, of whom we hope the number is fast increasing, who may be disposed to surround their dwellings with as great variety as possible of the beautiful and innocent inhabitants of our forests, with forms of every shape, and habiliments of every hue. A friend at our elbow suggests that in New-Hampshire he has known the common hazel-nut to be in fields or gardens where it was *exposed* to chance cultivation, and that the nut was much enlarged, while its native flavor, altogether superior to the filbert, was retained.

It were much to be desired, if any stimulus should be wanting in a case which should require none, that our horticultural societies should offer medals or premiums in some form, for the best specimens of *cultivated filberts and hickory and other nuts*, and especially for the best *blackberries*; for sure we are that in not many years of perseverance in a course of improvement, that berry would take a high stand among our table fruits, as its known sanitary qualities have given it a rank among the most efficient and agreeable medicines. For the exercise of skill and horticultural taste, few things offer a better subject for experiment, or one more promising, than the *blackberry*, beginning with the largest, the sweetest, and the kind most exempt from seed; for the wild variety is already as great as that of our native grapes, and who knows but that in a shorter time a more interesting result may be realized? In some parts of the country it may not be too late to preserve the seed of the best: and from seedlings who knows what new varieties may not come? How wide is the field! how unlimit-

ed the variety of objects on which *the man of the country* whose dealing is with the soil, and whose business is with Nature, may beguile his time, while he *benefits*, instead of slaughters, his fellow-creatures ! diffusing blessings instead of spreading misery around him !

Ticonderoga, Lake Champlain, 8th Aug. 1846.

THE STRAWBERRY.

MANAGEMENT WITH A VIEW TO ITS IMPROVEMENT.

WITHIN a short period the cultivation of various kinds of fruits has been crowned with success. The apple, pear and peach have each greatly improved ; but the strawberry, one of the most fragrant and delicious of fruits, has been surprisingly neglected, owing, perhaps, to the impression of its not being capable of melioration. Now, I have ascertained by actual experiment that it is susceptible of a high degree of improvement, which fact can be verified by carrying out the plan detailed below.

It will be necessary in the first place to procure the following implements : a small hand-fork with four prongs or teeth, similar in length and shape to those of the common carving-fork ; a long-handled fork like the dung-fork in use formerly, the teeth 4 or 5 in number, flat, $\frac{3}{4}$ of an inch broad, and 12 or 14 inches long ; to which I shall add another of great value, in this dry climate, to those who cultivate on a large scale, whether agriculturists or horticulturists : it is a cultivator with 4 or 5 teeth, 18 or 20 inches long, $2\frac{1}{2}$ inches wide, $\frac{3}{4}$ of an inch thick in front, tapering back to $\frac{1}{2}$ an inch, set in somewhat like a coulter, but the thick edge foremost, the point triangular, spreading about 3 inches. The proper use of it in dry seasons will secure a good crop of potatoes where they have not been ridged up ; in the kitchen garden it is invaluable, and a great labor-saving machine ; by removing two or three teeth it may be passed through narrow rows, close to the plants, and when properly applied will break up and open the soil to the depth of 12 or 14 inches.

The prominent points of the system now proposed are few and simple, viz. : choice of soil and preparation for planting ; selection of the best fruit-bearing plants, and method of treatment, especially with a view to the steady improvement of the fruit from season to season.

A light soil is best ; what is termed a sandy loam is preferable to any other.

In the early part of September, the weeds, &c. having been removed, plow or spade the earth deeply, harrow or rake thoroughly until *entirely cleared of roots of grass, clover, &c.* About the middle of the month avail yourself of the first appearance of rain to set out your plants. In selecting these, the FIRST OFFSETS only from the strongest old plants are to be taken ; all the rest must be rejected, producing only imperfect fruit, or being wholly abortive. Having with a pair of scissors, or sharp knife, separated the set from the runner and the parent plant, remove it carefully by inserting the small fork beneath, taking up a portion of the earth with the roots. Place each separately on a hand-barrow, board or flat-bottomed basket, to be carried to the planting-ground. The rows should be $2\frac{1}{2}$ to 3 feet wide, and the sets must be planted in a straight line from 15 to 18 inches asunder, in holes scooped out of sufficient size to receive the sets as taken up ; bring sufficient earth and press it well to the roots.

By this mode of treatment the plants will grow to a great size, and require more space than usual ; in truth, it is impossible to keep them clear from grass and weeds when crowded together. There will also be more room for the free use of the cultivator, hoes and rakes.

Toward the last of November run your cultivator between the rows, or fork up the earth, especially about the plants, dressing it neatly with the rake, being careful to eradicate every spear of grass or weeds. Lay as much *tan* as will cover a space of about 10 or 12 inches diameter and one inch in depth around each set, bringing it close up to the plant ; it will defend the roots from the frost and prevent the growth of grass and weeds. As soon as the weather and state of the ground will permit in the spring, fork in the *tan* 8 or 10 inches deep ; one

or two rows may be left with the tan on the surface, to secure a supply of fruit in the event of a very dry and hot season.

When your fruit begins to show signs of ripening, cover the earth about it with cut straw, in manner similar to the tan: it will defend it from the dirt and sand, accelerate the ripening and improve the flavor.

We have now arrived at an important point, for the next step is of more consequence, perhaps, than any other, and entire success cannot be attained without taking it aright. As soon as you perceive the fruit has arrived at maturity, place slips of wood 3 or 4 inches in length beside those plants bearing the largest and most perfectly formed, for it is from *these only* you are hereafter to select your plants.

When the bearing season is over, proceed at once to clear up the bed, trim away the dead and dying leaves, and pull up carefully all intruding weeds and grass. Plow with the cultivator, or fork up the earth, especially about the plants, without killing. Soon after they will put out runners, and when the first offsets have taken root, clip off with scissors the runner, but leave the connecting link with the parent entire of all those with marks attached. The runners of all the others must be clipped off occasionally in order to strengthen the plants.

Toward the latter part of November, or before the earth is frozen, repeat the same process before recommended, and during the ensuing season the same routine is to be followed as heretofore detailed.

The sets of this season's growth being taken from improved fruit-bearing plants, will give the first decisive evidence of the general improvement of the fruit in size, flavor, &c. In fact, it is similar in principle to that practiced in rearing cattle, breeding only from improved stocks.

In our climate irrigation may be resorted to with great effect: with plenty of water you can be sure of a great crop of superior fruit. E. T.

The *rationale* of the above is apparent, and we have but little to say in the way of comment or commendation. The much esteemed writer has chosen to be anonymous, and we have only ventured to append his initials; otherwise there would have been no occasion for us to add, that within the wide range of his acquaintance he is well known to be one of the most zealous and skillful horticulturists in our country.

Very much has been done by a few—yet very few—to improve this delightful fruit; but the difficulty consists in the want of that *personal and persevering attention* to such things on the part of the gentlemen of the country, which it will be impossible to beget, with any thing like universal or even general prevalence, until an improved public taste for all such elegant and useful employments shall have been produced by *improved education*.

When more lasting fame and higher rewards shall await such men as HOVEY, for producing a new and highly improved variety of a delicious fruit, than is awarded by the laws or by public opinion to the successful demagogue or the fortunate warrior, then will have been insured a progressive improvement in all the arts of civilization; then will domestic comfort and national prosperity follow in the wake of well-directed individual ambition and wise public legislation. The best managed and most promising strawberries we saw last spring were at *Millwood*, near Columbia, S. C.

[*Ed. Farm. Lib.*]

DISEASE IN POTATOES—A REMEDY SUGGESTED.

BALTIMORE, 29th July, 1846.

Dear Sir: You know I am not much of a farmer, and do not like to meddle with subjects I am unacquainted with; but this devastating potato rot has suggested to me an idea of its cause, which very probably may have occurred to you, as it is one which is natural, and may by being noticed in your journal set people at work to experiment, at least, on the subject.

It has occurred to me that as potatoes are indigenous to South America, or perhaps the central part of our Continent, and were first introduced into Europe 150 or 200 years ago, that so general a disease among them spread over Europe and

America, where they have been cultivated, may possibly be owing to the original vegetable having ceased to be soundly propagated, by the gradual decay of the power to produce it in the cuttings from the original plant, pretty much as we have seen our pear and peach trees fall off when grafted from original stocks. Perhaps if importations of the spontaneous article should be made, and by cultivation made what our former crops were, we might again have a *generation* of potatoes equal to any. It is worth examining into, and when we consider the mode of propagation by cutting out pieces with *eyes* from *previous* growths produced *in the same way*, it is not surprising that *deterioration* should follow. How otherwise can you account for so universal a destruction? I had a good crop at my country place near town. On Friday night we gathered some fine young potatoes; on Saturday we could not get one sound one, and had to dig up the whole. They had all been infected with the same disease. The cholera, supposed to be excited by a microscopic insect, is progressive, and runs its course from Asia to Europe and to America in due time: but if the potato disease is caused by a similar insect, it is rather extraordinary that it should make its appearance simultaneously all over the world.

The suggestions of the writer of the preceding are worthy of attention on every account. Though he disclaims all pretensions as a practical farmer, he is well enough read in the literature of all rural arts to know that it is by no means to practical men exclusively that we are indebted, either for the history or the improvement of fruits and vegetables.

We unaffectedly regret not having been left at liberty to give his name, because, besides other reasons, it is a part, and we trust he will believe no small part, of our reward, that our labors should attract the regards of cultivated men, and be by them considered, such as they are, as the growth of a venial ambition to raise the arts of Agriculture and Horticulture in public favor, and to cause them to be studied and followed as pursuits that eminently comport with high and various mental culture, while they conduce to the health of their votaries.

By gentlemen who have ships going to South America, no time should be lost in bringing home the natural potato. At the same time, we should entertain the hope of realizing the desideratum in this case as soon by planting the apple of the potato we have, with a view to the establishment of a new variety equal to the Mercer, or the Kidney, or the Foxite, out of the great number of inferior kinds to be thus obtained from the seed of any given variety. These are the cases to which agricultural and horticultural societies would do much better to apply their premiums than to the *greatest quantity* of this thing or that, the production of which requires but little skill and develops nothing new.

Mr. TESCHEMACHER, of Boston, we believe was the first to pronounce the opinion that the cause of this dreadful malady is a *fungus* belonging to the class of moulds, and the genus *Botrytis*; and in this he is sustained by the concurrent opinion of Professor MORREN of Liege, whose Essay may be found in the first volume of the MONTHLY JOURNAL OF AGRICULTURE, and seems to be regarded as one of the most authoritative papers which has appeared on this subject. As to the influence of *variety*—"Very early kinds," says the last-named writer, "have escaped and are fit to be preserved, for they were full grown before the fungus made its appearance."

As regards the raising of potatoes from *seed*, Professor M. remarks that "This is a matter of great importance and very advisable, provided the seed or apple be procured from *foreign regions*; and he urges that "The reason why potatoes equally long cultivated, but more recently introduced than others, have better been able to resist the disease, is the manifestation of a more energetic vital action; and this greater energy was a necessary consequence of the plant being transferred into another and better soil." This reasoning, we confess, appears to us to be anything but conclusive, unless it were shown that the soil of Germany is a "*better*," as well as "*another*" soil than that of England. "It is," says the writer before us, "farther a fact of experience that the seeds of a plant will be better able to produce varieties that will live and thrive in their new native country, the more distant the country of the parent plant is. Instances are taken from the dahlia, which has innumerable varieties in Europe, but none in Mexico, its natural country; of the camelia, which is nearly of uniform appearance in China and Japan, but of which numbers of varieties are raised in Eu-

rope." We proceed to give the residue of the remarks by P. F. FROMMERS, first assistant in the laboratory of the Agricultural Chemistry Association of Scotland, as they deserve attention independently of their bearing on the disease of the plant. His remarks on the influence of climate upon the qualities of the potato accord with experience in the United States. Elevated regions and cooler latitudes give us our best potatoes and our heaviest oats.

"In case, however, the process of raising potatoes from seed be tried, it is of prime importance to select a proper soil for cultivation, and also a sound and fertile fruit, duly prepared for propagation, by allowing only two or three in each bunch to reach maturity, and cutting off the rest. When intended for use, the seed should be taken out of the fruit, and well washed, keeping only those which sink in the water, farther dried in the sun on a piece of paper, during twenty-four hours, and preserved dry and safe from the attack of insects. To get very early kinds, the fruit or apples should be taken from the flowers that have raised their petals first.

"It is also proved by experience that the potato prefers a damp climate to a dry one, and grows better at a moderate than at a high temperature. Peru, where it grows in a wild state, produces no potatoes that are edible, and at the same time yield large returns; it is in the north of America that they increase so much in size and produce. In Ireland, of which the climate is damp, and the temperature moderate, and in Lancashire, the potato culture reaches a high state of perfection in every respect; but in Italy, Spain, and the South of France, and part of Germany, the produce is of inferior quality.

"For these and other reasons, it is advisable to pay particular attention to the raising of winter potatoes; they are said from experience to suffer much less from disease than those raised in summer. The potato, although it may be planted to a depth of three feet without danger, should, however, be sown less deep—half a foot, for instance.

"Reference is made to the experiments made by Mr. Goodfille of Granard; by Mr. Jackson in Manchester; to those of Mr. Williamson, made in the island of Bute and in Perthshire; and of Mr. Herry of Handsworth, to prove the advantage of raising early potatoes. Several growers in Germany and France have done the same with equal advantage.

"The practice followed in Lancashire, of planting only the rose-end, and keeping the opposite part for food, is considered the best of all. As the eyes of the rose-end produce their shoots about three weeks earlier than those of the heel-end, this method is well calculated to grow early varieties."

DARWIN, in his entertaining "Voyage of a Naturalist," published lately by the Harpers, gives the following account of this important vegetable as it was found on the island of Chonos, in the Pacific, on the coast of South America:

"The wild potato grows on these islands in great abundance, on the sandy, shelly soil, near the sea beach. The bluest plant was nearly three feet in height. The tubers were generally small, but I found one of an oval shape two inches in diameter. They resembled in every respect, and had the same smell as English potatoes; but when boiled they shrunk much, and were watery and insipid, without any bitter taste. They are undoubtedly here indigenous; they grow as far south, according to Mr. Llav, as lat. 50, and are called *Aquinas* by the wild Indians of that part; the Chilote Indians have a different name for them. It is remarkable that the same plant should be found on the sterile mountains of Central Chili, where a drop of rain does not fall for more than six months, and within the damp forests of these southern islands."

In this improbability of the potato by cultivation we have another example of the design of Providence that man should be diligent and exercise both his mental and physical faculties for the melioration of all the gifts of Nature—for what fruit, flower, grass, grain, vegetable, or animal has not been variegated and made more beautiful and better, by domestication and artful appliances? And should not this reflection alone convince the most skeptical that Agriculture and Horticulture are in their very nature eminently intellectual pursuits?

Finally, everything goes to show the soundness of the suggestions of our correspondent that we should recur, under existing circumstances, to its native *habitat* for the original or parent stock of the potato, leaving it only a question whether it would be most conducive to the end in view to bring the plant itself, or the seed of the apple, with which to establish new varieties of youthful and more vigorous constitution; and yet, whether the product of these would be more exempt from the prevalent disease is, after all, but a problem—worthy of being solved by the experiment suggested, when we consider how easily it might be done, and how important is the object proposed.

[Ed. Farm. Lib.]

P. S. The following meets our eye at the moment; let it be tried, though not in the expectation that there will be "no diminution of the roots" if the tops are removed before they are ripe—else what is the use of the tops? Tops have been laid on our table which have every appearance of being killed by having their hearts eaten out by worms:

MR. M. C. WEBSTER has addressed a letter to the Editors of the Hartford Courant. He says the tops of the potatoes should be mowed off when they are about half or two-thirds grown. He has tried the experiment, and found it fully successful. He mowed off one-half a potato patch, and left the remainder as they were. Those left with the vines on were nearly all destroyed by the disease, while in that portion from which the vines were cut not a single diseased potato was found. It has been found, too, that cutting off the vines does not diminish the roots.

NOTES OF A DESULTORY READER

ON THE SWIMMING POWER OF HORSES.

On the capacity of horses for swimming, men's ideas are very loose and various. Few who have never been in the western country would believe how very common it is there to *swim on horseback* over creeks and bayous. Such trifling impediments are not allowed to stand in the way of a hardy pioneer, who in some respects, and especially in the mastery and use of the horse, may be said to resemble the *Gaucha* of the South American pampas.

Traveling once in the western country, I expressed some fear of not being able, from the state of the roads and the absence of bridges over the water courses, to reach a certain place by a given time. "Oh!" said a friend, "nothing need be more certain. Take my horse and follow such a road: you will only have to *swim* the 'Big Black' and the 'Alligator Bayou,' and you may reach your destination before dark." On my appearing shocked at the necessity of swimming rivers and bayous, and protesting that I could not, myself, swim a foot, he very coolly answered, "Oh, never mind, *my dear sir*; my horse *swims the driest* of any horse you ever saw."

I remember hearing, when a boy, that a horse belonging to St. Mary's county in Maryland, had crossed the ferry of Patuxent at Benedict, and was turned loose in the rich pastures of "Battle Creek," the superb estate belonging to the father of Chief Justice Tane, in Calvert county. The next day the horse, on being searched for, was returned *non est*. It was finally ascertained that he swam the Patuxent, where it was at least a mile wide, to get home again; so true is it that with horses, even more than with some men, there is "no place like home!" Yet some moralists of the first water would degrade them and impeach the goodness of their Creator, by divesting all animals of every feeling of friendship and sociality, and all except the coarsest and most brutal passions and propensities of animal nature. Whereas every man of observation who has traveled by that most agreeable of all modes of traveling, on horseback with one or two good-natured, sociable and witty companions, must have perceived that the horses which fall in with each other on the road sometimes become acquainted sooner than their riders, and part company with more evident reluctance. *They* don't wait to be introduced to each other; indulge in no anti-social or sinister speculations as to each other's wealth and standing in society; lay no schemes to inveigle or overreach; and when, finally, they arrive at the place to be baited, no degree of hunger can prompt them to rush to their meals, with more evident apprehension of not getting their share, or with more impetuous and indecent haste than we witness with disgust on the part of modern fashionable travelers on "fashionable tours."

But as to the swimming power of the horse. Those who were cognizant of the fact of the horse swimming the Patuxent river, from Calvert to St. Mary's county, where it was a *mile wide*, were almost afraid to tell it, for fear of being doubted; yet, in a book before us, "*DARWIN'S VOYAGE OF A NATURALIST*," which the HARPERS have had the good taste and judgment to let us have so promptly, and which will be read with the liveliest interest by all who have a taste for natural history; this very entertaining and popular author says: "On a former

excursion, I crossed the Lucia near its mouth, and I was surprised to observe how easily our horses, although not used to swim, passed over a width of near six hundred yards. On mentioning this at Montevideo, I was told that a vessel containing some mountebanks and their horses being wrecked in the La Plata, one horse swam *seven miles to the shore!* In the course of the day I was amused by the dexterity with which a Gaucho forced a restive horse to swim a river. He stripped off his clothes, and jumping on his back, rode into the water until it was out of its depth; then slipping off over the crupper, he caught hold of the tail, and as often as the horse attempted to turn round, the man frightened it back by splashing water in its face. As soon as the horse touched the bottom on the other side, the man pulled himself on, and was firmly seated, bridle in hand, before the horse gained the bank. A naked man, on a naked horse, is a fine spectacle; I had no idea how the two animals suited each other. The tail of a horse is a very useful appendage; I have passed a river in a boat with four people in it, which was ferried across in the same way as the Gaucho. If a man and horse have to cross a broad river, the best way is for the man to catch hold of the pommel or the mane, and help himself with the other arm."

So much for what a horse can do in the way of swimming when the crisis comes to "sink or swim."

History presents no example of the efficiency and usefulness of the horse to equal that which was realized by CORTEZ, among the greatest of warriors, as related by PRESCOTT, easily the first of American historians, and what is more, an honest historian! for about the most detestable of all swindlers is he who swindles on a point of history.

But the power of the few horses landed with Cortez on the shores of Mexico was truly magical, for it was much greater in a *moral* than in a *physical* sense.

The native Mexicans had never before seen or heard of such a beast; and under the impression that man and horse were but one animal, each being part and parcel of the other, they concluded it could be nothing less than the Devil incarnate, and did not wait, as did their descendants, for the charge of our gallant MAY, but fled by thousands at the approach of a single platoon of cavalry.

Do not all military annals abound in examples to show the overbearing effect of moral influences in war, and that every General should be, practically, a good metaphysician? If old "Rough and Ready" had possessed the means, at hand, to take full advantage of the running start he got at Palo Alto, and the panic his victory spread in the enemy's camp, he might then have overrun a good part of Mexico.

A FRIEND OF THE HORSE.

MACHINERY.—SAVING EFFECTED BY IT IN GETTING OUT GRAIN, AS ASCERTAINED IN GERMANY.—Sowing-machines are only in use for rape, and occasionally for turnips. Where seed is abundant and labor cheap, the outlay for expensive machines is not repaid, as is the case where labor is dearer. This principle is farther confirmed by experiments that have been made with the Scotch threshing-machine as modified by M. Dombasle, in Alsace. For small quantities the advantage of machinery is scarcely apparent; but machinery applied to large quantities produces a great saving. Experiments made in Germany have shown that where—

| | | The produce in Wheat costs to thresh: | |
|----------------------|--------------------|---------------------------------------|--------------|
| | | With the machine. | By hand. |
| If the production is | 5,000 sheaves..... | 93 florins. | 135 florins. |
| " | 10,000 " | 116 " | 270 " |
| " | 20,000 " | 163 " | 541 " |
| " | 40,000 " | 265 " | 1,082 " |

Supposing the outlay for a threshing-machine, of 4-horse power, to be £70, it is reimbursed in one year in a farm producing 40,000 sheaves. A farm producing only 5,000 sheaves would not admit of sufficient saving to pay the interest on the investment.

INDUSTRIAL RESOURCES OF CANADA.

SETTING out lately to visit Niagara Falls, for the first time, by the way of Buffalo, we were easily drawn by the Rapids, and other no less resistless influences,* down to MONTREAL and QUEBEC.

Lundy's Lane, and the Heights of Queenstown, and the Plains of Abraham, and the old Forts Niagara, Ticonderoga, &c. all had their attractions of historical interest. No American could regard with indifference the very localities consecrated by the blood of such men as BROWN and SCOTT, where that rare occurrence in military annals took place—the *crossing of bayonets*, as at Lundy's Lane; and that, too, by men, as might be expected, of the *Saxon race*.

"When Greek meets Greek, then comes the tug of war."

Neither can any man of true sensibility, of whatever country, walk without emotion over the very spot where the young and gallant General WOLFE, expiring in the arms of victory, exclaimed, "Now, then, I die contented." Absorbed by the recollection of such signal events, hospitably entertained, and charmed by the splendid music and military movements of the famous Scotch Highlanders, at Montreal and Quebec, it may be supposed that little chance was afforded to notice the agricultural resources and products of the region so hastily traversed; yet in that respect the journey was by no means devoid of value, as we may endeavor, when more at leisure, to show our readers. For this we shall find justification in the resemblance between the climate and soil of the Canadas and of Western New-York and a large portion of Vermont.

The crops about Montreal, as well of grain as of grass, were to all appearance highly remunerating as to quantity, indicative of a fine soil to work upon; but the cultivation generally was not marked by extraordinary neatness, nor did it indicate an active and general spirit of improvement.

In such cases, as in many others, trifles "show which way the wind blows." Of these trifles, if so they may be termed, we might mention several of strong signification. The most inauspicious was the languishing condition or death of societies which had existed for the promotion of improvements in Agriculture.—Sad and unpromising is the moral condition of a great class of men, when, through despair or indifference, they abandon the hope of promoting their common welfare by communion of thought, the interchange of discovery, and by concert of exertion and influence for the protection of those interests which, when left unguarded, are sure to be assailed by rival or antagonist classes: and these remarks are as applicable, under like circumstances, to all other agricultural communities, as to that of the Canadas.

Let us advert to another symptom which, whatever others may think, had its force with us. In a bookstore at Montreal, we inquired if they had any agricultural works? hoping to pick up something new. The answer was, "they believed they had one,"—and then produced "A TREATISE ON THE THEORY AND PRACTICE OF AGRICULTURE, ADAPTED TO THE CULTIVATION AND ECONOMY OF THE ANIMAL AND VEGETABLE PRODUCTIONS OF AGRICULTURE IN CANADA." On asking

* There were ladies in the case.

the price, we were told, “\$1 50—if it would sell for anything”! So we paid the demand, and behold! we found this little work of 300 pages—worth \$1 50, “if it would sell at all”—to be full of agricultural literature and practical information of a high cast, and such as ought to be in the library of every agriculturist in Canada who is not content to degrade his own profession—the very business of his life—by considering and following it as a mere drudgery—a work of routine—in the management and conduct of which it is only necessary that the man should be one degree raised above the brute he drives. For so every man entitles himself to be denounced who would divest Agriculture of that elegance and dignity which are only to be associated with intellectual exercise and the charms of literature.

To no such category does the author of this work belong. We had not time, after getting his book, to seek the favor of a personal acquaintance with its author, WILLIAM EVANS, “Secretary to the Montreal Agricultural Society,”—but it requires very little observation to pronounce that, if communities are not improved by the continued and enlightened labors of such Societies, it is never the fault of such Secretaries.

We had hoped to have found in this work some exact history of the origin and introduction of the *Canada Horse*. A slight examination of it, however, has not proved satisfactory in that respect. We noticed particularly, nevertheless, as we went along, the horses of the country, such as are literally “the horses of all work,” in Montreal and Quebec; and, with the exception of a few in private carriages, procured from “the States,” they are, *almost without exception*, of the frame and character of what is understood with us as the “Canadian Horse,” viz. stout, close knit, and short jointed, with a rather large and (behind) crooked leg. The muzzle not particularly coarse, but the jowl thick, and head and neck large and heavy, with long mane, and uncommon width and flatness between the eyes; very few of them rising to 15 hands, but evidently very hardy, true to the draught, and exceedingly strong. Contrary to the impression which prevails, we are now satisfied that the specimens which have been brought to the United States do full justice to this breed of horses, which to us appear to be well adapted to the climate and labor of Canada. We agree on this point with Mr. Evans, that “the horse best calculated for agricultural purposes here, in summer and winter, is one of moderate size, strong, active, spirited, and of hardy constitution. Can any horse more nearly come up to this description than a good-sized, well-shaped Canadian horse?” We are, in fact, almost settled in an opinion we have elsewhere intimated, that Nature will take care to adapt animals, as well as vegetables, to the circumstances of the country; and though Art, when working in harmony with her, may do much to improve her productions, it must not too rudely cross and oppose her purposes.

In some conformity with our impressions on this subject, DARWIN, in his *Voyage of a Naturalist*, elsewhere referred to, remarks: “It is curious to observe how the *seeds of grass* and other plants seem to accommodate themselves, as if by an acquired habit, to the quantity of rain which falls on different parts of this coast;” and in “*CONNECTION OF THE PHYSICAL SCIENCES*,” by MARY SOMERVILLE, lately published, from the seventh London edition, by the HARPERS, of New-York, we find—“It is even said that a distance of 25° of latitude occasions a total change, not only of vegetable productions, but of organized beings.” So we are inclined to believe that if the high-bred south-eastern courser, or the coarse Conestoga wagon-horse, were turned loose in Canada, in process of time they

would accommodate themselves to the country, and take on the form and characteristics of the Canadian horse. But a truce to speculation. Let us give, from Mr. Evans's book, the

MEANS OF PROGNOSTICATING THE WEATHER.

By means of the barometer, we are enabled to regain, in some degree at least, that foreknowledge of the weather which the ancients did possess. Chaptal considers that the value of the barometer, as an indicator of the approaching weather, is greater than the human knowledge of the most experienced countryman, and indeed of all other means put together.

The rising of the mercury presages, in general, fair weather; and its falling, foul weather, as rain and snow, high winds and storms.

The sudden falling of the mercury foretells thunder, in very hot weather, especially if the wind is south. The rising in winter indicates frost; and in frosty weather, if the mercury falls three or four divisions, there will follow a thaw; but if it rises in a continued frost, snow may be expected.

When foul weather happens soon after the falling of the mercury, it will not be of long duration; nor are we to expect a continuance of fair weather, when it soon succeeds the rising of the quicksilver. If, in foul weather, the mercury rises considerably, and continues rising for three or four days before the foul weather is over, a continuance of fair weather may be expected to follow.

In fair weather, when the mercury falls much, and low, and continues falling two or three days before rain comes, much wet must be expected, and probably high winds.

The unsettled motion of the mercury indicates changeable weather.

Toward the end of March, or more generally in the beginning of April, the barometer sinks very low with bad weather, after which it seldom falls lower than 29 degrees 5 minutes, till the latter end of September or October, when the quicksilver falls again low with stormy wind, for then the winter constitution of the air takes place. From October to April, the great falls of the barometer are from 29 degrees 5 minutes to 28 degrees 5 minutes, and sometimes lower; whereas, during the summer constitution of the air, the quicksilver seldom falls lower than 29 degrees 5 minutes. It therefore follows that the fall of one-tenth of an inch, during the summer, is as sure an indication of rain as a fall of between two and three-tenths is in the winter.

Oil of vitriol is found to grow lighter or heavier in proportion to the less or greater quantity of moisture it imbibes from the air. The attraction is so great that it has been known to change its weight from three drachms to nine.

If a line be made of good well-dried whipcord, and a plummet be fixed to the end of it, and the whole be hung against a wainscot, and a line be drawn under it, exactly where the plummet reaches, in very moderate weather it will be found to rise above such line, and to sink below it, when the weather is likely to become fair.

A farmer who will accustom himself to observe the rising and setting sun, throughout the year, may be able to make a very accurate estimate of the weather. If the sun set clear, and no clouds intervene, when disappearing below the horizon, the succeeding day will generally be fine; and, on the contrary, if the sun sets cloudy, or is intercepted from the view by clouds at the moment of disappearing below the horizon, rain will generally fall within the succeeding twenty-four hours. Winds and storms will be indicated by the appearance of the atmosphere before they occur. In fact, Providence has afforded many signs whereby the attentive and industrious farmer may be in a great degree guarded against any sudden changes in the weather, which would be injurious to him; and in observing constantly the rising and setting sun, he is amply repaid for his attention by the opportunity it gives him of seeing the most glorious picture Nature offers to our view. If some seasons are less propitious to us than others, from long continued drouth or moisture, we should rejoice and be thankful that they are not of frequent recurrence, and are generally occasioned by natural causes, which are partly explained in the foregoing pages.

APPLE-GRAFTS IN OHIO.—ISRAEL PUTNAM, Esq. according to Mr. Bateman (excellent authority), Editor of the *Ohio Cultivator*, is entitled to the honor—and such we consider it—of having obtained the first grafts of *apples* introduced in Ohio. They were brought from the orchard of his grandfather, Gen. Israel Putnam (of wolf-killing memory), and were “put into the hands of William Rufus Putnam, for him to distribute, and graft a nursery of seedling stocks for himself and brother. This pioneer nurseryman is still living, in the enjoyment of sound health, and has in his possession the original list of these grafts.”

PLANTING IN SOUTH CAROLINA, AND IN MISSISSIPPI AND LOUISIANA.

EXPENSE AND RESULTS COMPARED.

Sir: In your periodical for July, 1846, there is a communication signed S. B. on the subject of the "Cost and Profit of Cultivating Corn and Cotton" in South Carolina and Georgia.

Presuming something on the same subject from Mississippi and Louisiana would not be unacceptable to your readers, I offer you the following:

On the uplands in Mississippi and Louisiana, the average product of corn per acre is not less than 25 bushels. It ranges generally between 25 and 30 bushels.

On the lowlands the average product is 35 bushels per acre, and generally ranges between 35 and 45 bushels.

On the uplands the average product of cotton per hand is 6 bales of 400 lbs.; or 2,400 lbs.

On the lowlands the average product is 8 bales, or 3,200 lbs. per hand.

The average cost of production is rated at 2 cts. per lb.; leaving 4 cts. per lb. (assuming the value to be 6 cts.) for interest on capital, insurance on property, &c. &c.

On all well-managed plantations there is no difficulty in raising corn and fodder enough for the supply of the place, without any interference with the culture of the cotton crop. On the lowlands it is an easy matter to raise more corn than the place can consume, and as much cotton as the hands can pick, from August till January.

Contrast the product in South Carolina and Georgia with that of the *low* lands of Louisiana and Mississippi:

SOUTH CAROLINA AND GEORGIA.

12 bushels of corn per acre.
150 lbs. of clean cotton do.
Average product per hand, 1,200 lbs.
Worth, at 6 cts. \$72.

LOUISIANA AND MISSISSIPPI.

35 bushels of corn per acre.
450 lbs. of clean cotton do.
Average product per hand, 3,200 lbs.
Worth, at 6 cts. \$192.

It is not universally conceded, among our most intelligent cotton planters, that the cost of production is increased by the policy of the Government. On the contrary, many, *very* many, of our most intelligent planters—and of those, too, most devoted and minute in their attention to their interests—believe the policy of the Government, in fostering home industry, has diminished the cost of production, and enhanced the value of the product.

The mere expense of feeding and clothing in Louisiana and Mississippi amounts to but little, and forms a small item in the plantation accounts. For example: Take a force of 50 hands (and, to give this force, the aggregate number will be 75 or 80), and what will be the cost of clothing and feeding?

| | |
|---|------|
| Say for 750 yds. of cotton cloth, for the effective force, at 10 cts. per yd. | \$75 |
| .. 250 .. jeans, at 38 cts. per yd. | 95 |
| .. 150 .. linseys, at 28 cts. per yd. | 42 |
| .. 50 for the children, at 28 cts. per yd. | 12 |
| .. 150 .. cotton cloth, for do. at 10 cts. per yd. | 15 |
| .. 65 brls. of pork, at \$10 per brl. | 650 |
| .. Hats, shoes, and head bdkfs. | 125 |

Thus, the total cost of feeding and clothing a plantation (the effective force on which is 50 hands) would be... \$1014
Deduct the amount for pork—which is not affected (at least, not *enhanced in price*) by the policy of the Government..... 650

And we have for clothing \$364

Now, admitting that the cost of this item is enhanced 30 per cent. by the protective duties, and it only adds \$109 20 to the plantation expenses. So that a
(1842)

plantation producing, in Louisiana, 400 bales of cotton, worth, at 6 cents per lb. \$9,600, is taxed, for the benefit of the manufacturing interest, \$109 20 annually.

But, small as this item is, it cannot but be felt by those whose product is but 12 bushels of corn to the acre, and 1,200 weight of cotton to the hand; because the expenses of producing in South Carolina and Georgia 3 bales of cotton to the hand amount to as much per head as those of the Louisiana planter, who makes 35 bushels of corn to the acre and 8 bales of cotton to the hand.

The truth is, the Carolina and Georgia planters, who make but 12 bushels of corn to the acre, must cultivate more land in corn in order to produce their supplies than the Louisiana planters, and consequently must cultivate less in cotton; and this may be one and a principal reason why cotton planting has ceased to be so profitable in those States as it once was. The average product per acre on the lowlands in Louisiana being 450 lbs. while in Carolina and Georgia it is but 150 lbs. it follows, that to produce 8 bales to the hand, he must cultivate 7 acres to the hand, while to produce 1,200 lbs. or 3 bales to the hand, he must, in Carolina and Georgia, cultivate 8 acres to the hand. But, for the greater distance given to the cotton in the rich lands of Louisiana, it is easier to cultivate 10 acres to the hand than it would be to cultivate 7 on the poor lands of Carolina and Georgia.


Besides, on the lowlands of Louisiana it is so easy to raise a full supply of corn that most of our planters are enabled to raise more than half their supply of meat, and thus diminish the plantation expenses very considerably. It is pretty evident that the diminished profits of cotton planting in Carolina and Georgia are not so much the result of the policy of the Government as of the increased facilities of production in the more fertile valley of the Mississippi.

It is altogether probable that the recent change in the policy of the Government in the protective duty on sugar, may tend still farther to diminish the profits of the cotton planter in Louisiana and Mississippi, as well as in Carolina and Georgia. It is very certain that the diversion of capital and labor from cotton to sugar planting, which has been in such rapid progression for the last two or three years, will now be arrested, and, not improbably, that on many cotton plantations where preparations were making for the culture of sugar, the process of change may be altogether abandoned. Whatever tends to increase the culture of a product already superabundant, must tend to lessen the profits of that product. None will deny that, but for the disastrous season of last year, the cotton crop would have reached 2,500,000 bales. Would not such a crop, other things in Europe being the same, have reduced the price fully one cent a pound?

But if the cotton planters of all sections would devote more of their time, labor and attention to the improving of the quality of their cotton and to the raising, *within themselves*, of all they *consume, use or wear* on their plantations, and leave to politicians the regulation of the policy of the Government, they would do more and better for their own direct interests.

X. Y. Z.

Rapide, La. July 20, 1846.

 If agriculturists could break or "slip" the blind bridles of party, with which demagogues ride them for their own aggrandizement, and, instead of "leaving to politicians" the regulation of the policy of the Government, would have their sons so instructed that they might be qualified to *think*, and to understand and regulate the policy of the Government for *themselves*, with reference to the landed interest, which is the basis of all other interests, it would afford some ground to hope for the prosperity and perpetuity of the Republic. If farmers would vote for good, well-instructed, well-informed *landholders*, or invariably for *persons who have something to lose* by vicious or ill-directed legislation, we should not have witnessed the willingness or the ignorance with which the landholders of this country have allowed themselves to be fleeced, for the last thirty years, of about *three hundred millions*, for the maintenance of the military, or man-killing, machinery of this Government!—money enough to have overspread the land with a flood of *useful* knowledge, and to have carried a canal or a railroad to almost every man's door, and to have bound together all parts of the Union as with a chain of adamant. Instead, then, of having all our young men, sons of broken-down families, supplicants for clerkships, we should see them seeking contentment

and honorable distinction as intellectual cultivators, on a scale however small—satisfied with homely and wholesome fare—despising the honors to be won by the arts of the demagogue, and looking, for happiness and character, to intellectual enjoyment and a life of virtue and usefulness.

[*Ed. Farm. Lib*]

INDUSTRIAL RESOURCES OF THE WEST.

HEMP CULTURE.

To the suggestion of Mr. Johnson, (son of our old and lamented friend, the late Hon. F. JOHNSON, of Kentucky,) of the distinguished firm of JOHNSON & FELLOWS, commission-house in New-Orleans, we wish to make acknowledgments for putting us in communication with the writer of the following—than whom no man in the Union is better informed on the hemp industry of the country.

This is another of resources for the benefit of our readers, developed by a very short, but most agreeable sojourn in the South last spring.

JOHN S. SKINNER, Esq.

LOUISVILLE, August 1, 1846.

Sir: I have received your letter of the 24th ultimo. I will now, with much pleasure, reply to a portion of its contents, and will hereafter communicate to you such facts, in relation to the hemp industry of our country, as I may deem of sufficient interest for record in the pages of *THE FARMERS' LIBRARY*.

I can now assert, without the shadow of a doubt, that the hemp trade has been brought to perfection. This has been done by the beautiful combination, in one machine, of the brake, the scutcher, and the heckle; for which combination we are indebted to the joint ingenuity of Dr. Leavitt and Messrs. Crocker and Hawes of this city.

I have been a daily inspector of the operations of the machine for the past week, and though I have been engaged for the last four years in the construction of a great variety of hemp machines, yet I am compelled to acknowledge that this is the only one that approaches even toward a complete machine. We find no difficulty in breaking, cleaning, and heckling *unrotted* or rotted hemp on the same machine. The operation is performed with great expedition, and without converting an undue proportion of the fibre into tow; indeed, I am convinced that there will be much less tow made by the machine than is usually made by the hand-brake. This machine is equally well adapted to flax, rotted or unrotted, as to hemp.

Knowing now that the machine has been brought into existence for the rapid breaking and cleaning of unrotted hemp, let us for a moment enter into some speculations in relation to that description of hemp, and its adaptation to naval purposes. An experiment was made many years ago in rigging the ship *North Carolina* with hemp in its unrotted condition. On her return, after an absence of three years, her rigging was examined, and found to be in a state of decay—produced, as was stated, by a fermentation of the hemp. This examination was considered as conclusive, and no consideration was ever after given to unrotted hemp, so far as the Navy Department was concerned.

I am aware that such would be the fate of all hemp, so manufactured, of an unprepared article. Its decay was caused by fermentation, and fermentation is now looked on as the beginning of decay; hence all American water-rotted hemp has commenced its decay before it has been spun into cordage—it being impossible to prepare it for the hand-trade without carrying it through the process of fermentation.

My object has been (and I am sure that it has been attained) to decompose the fermenting agent while the hemp is in its unmanufactured form: and, doing so, surely fermentation cannot ensue.

There is but one element in vegetable matter that can produce fermentation, and that is nitrogen; that can be evolved by the application of a high tempera-

ture, by water, by acid, or by an alkali—as either will answer. I choose that of heat, as most convenient; and, by its application to hemp, can cure it or season it, and give it as great a durability as heat or water,* applied to any other woody fibre, gives it durability.

You would not expect to find a good ferment in your yeast after having subjected it to a baking or boiling process, because the fermenting principle has been destroyed by the agency of heat. Such will, invariably, be the result; and so it must be with hemp, it being governed by the same laws that govern every variety of woody fibre.

You may infer from the above remarks that I do not consider Billings's machine or Billings's process, for the preparation of hemp, as likely to be generally adopted.

Yours, very respectfully,

JAMES ANDERSON.

AGRICULTURAL COLLEGE NEAR PHILADELPHIA.

"WE learn by a notice in the Germantown (Pa.) Telegraph, that James Gowen has recently purchased the old college buildings and grounds adjoining his beautiful farm and residence at Mt. Airy, with the design of establishing an Agricultural Institute, if sufficient encouragement is offered. From what we know of Mr. Gowen's intelligence, energy and skill, and his thorough practical knowledge of farming, together with the admirable adaptedness of his grounds and buildings for the purpose, we do not hesitate to avow our opinion that he is just the person, and Mt. Airy just the place, for establishing an institution of this kind. Let the public press, and especially the friends of agricultural improvement, lend their aid and testimony in behalf of this and all similar undertakings, when wisely commenced, and there can be no doubt of their success.

"We see Mr. COLMAN's name mentioned in the Telegraph as a suitable candidate for the Presidency of the institution; but we do not think he would be willing to assume that responsibility, nor should we deem it expedient to select, for that office, a person of his advanced age."

THE above, from the Ohio Cultivator, is the first notice which we have seen (17th of August) of the matter to which it refers. We agree as to the location and the public spirit of Mr. G. and his high appreciation of the great benefit to be derived to the whole country by measures which shall result in *enlightening, as the best means of improving the practice of Agriculture*. As to Mr. COLMAN's willingness to "assume the responsibility" of the Presidency, we do not know; but we do not agree with our respected colleague of the Cultivator, that it would be inexpedient on account of the reason named, or any other of which we are aware. On the contrary, we should judge Mr. C. to be eminently fitted for such a trust, with suitable assistants in the various departments, and himself placed in a position perfectly independent and above the control of inferior minds. In one thing friend Bate-man will agree with us—that if he were to undertake it, judging by all we have seen from his pen, he would enter upon the duties with an elevated view of their importance, *aiming to do good, and leaving fame to follow*, uninfluenced by gross mercenary motives, and scorning that sort of popularity which is caught by setting traps to amuse or to bamboozle the public.

The number of agricultural institutions which are being established in various parts of the country, afford a most gratifying proof that the *sentiment has taken root*, that Agriculture has its science and literature and is a fit subject for the *occupation of the mind*. It is by planting and disseminating that sentiment that American Agriculture is now to be permanently and essentially benighted and elevated—more than by offering a few *dollars for fat hogs, or large crops on small lots*. We should like to receive and publish a complete list of all the agricultural schools, their terms, course of instruction, &c. &c.

An Agricultural School has, as we have casually seen, been opened on the farm of Gen. HARMON, in the western part of New-York; one by Mr. JOHN WILKINSON in Dutchess County, New-York, and a "Scientific and Practical Agricultural Institute" near Walden, in Orange County of the same State. These may be considered among the first fruits of

* We season at our Navy-Yards, by heat and by water, every variety of timber.
In Russia the hemp is kiln dried immediately after pulling. It is immersed in water during the winter months. Is it possible, then, that Russia hemp can undergo the process of fermentation?
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greater attention to, and better systems of education in New-York; but what are their terms and regulations—the number and qualification of the Professors, and the plans of instruction, we are not informed. Such institutes should be gotten up with great care, under the best lights, and be conducted by men of adequate acquirements, and of elevated ideas of the importance and usefulness of their office; and we have no reason to doubt that this has been done in the cases referred to.

Our General Government, by the vote of the *Representatives of the landed interest*, appropriates annually more than \$100,000 to the object of *military instruction*! Suppose in their wisdom these Representatives had supported also, at the same expense, for the last thirty years, an Institution for the *Instruction of Teachers of Surveying, Mineralogy, Botany, Comparative Anatomy, Agricultural Chemistry, Carpentry, and Engineering as connected with the Structure of Roads, Canals, Bridges, &c., Mechanical Philosophy*, and all the arts and sciences, necessary to a better understanding of the *principles of Agriculture and Horticulture and the manufacturing arts*? What a mass of useful knowledge might by this time have been diffused *through every State in this Union*! Knowledge which could not be put in use without increasing the comforts of and happiness of Society! Ay, and this will come to pass, in time, when, by the proper education of the rising generation, farmers are brought to think for themselves to feel their power and to *know how to use it*.

FAIR OF THE AMERICAN INSTITUTE.

FOR the Nineteenth Fair of the American Institute, including an exhibition of pure-blooded and other cattle, a plowing match, and spading match, and horticultural show, the Managers announce the completion of extensive arrangements on the spacious premises, corner of Twenty-third street and Fifth-avenue.

Feed of every description will be provided on the ground at the cheapest possible rate for those who wish to purchase; and as no entrance money for cattle will be required, and exhibitors may bring their own feed, the expenses on the occasion will be greatly reduced.

Animals offered for premiums will be under the special direction of a member of the agricultural board.

All entries of stock must be made in writing, and delivered to the clerk at the time of entry at the committee room, on Monday, the 12th day of October, with full pedigrees of the animals, their breed, ages, owners' names, &c.: and with such observations as to their food, thrift, constitution, milking or fattening qualities, as they may see proper to add. If previously sent to T. B. Wakeman, Corresponding Secretary of the Institute, they will be attended to. This is absolutely necessary, that the Secretary may be able to prepare lists in time for the use of the Examining Committee; and neither the Secretary nor the Committee will be responsible for the omission of any animal on the lists, if this rule is not complied with. Labels stating the breed of the animal, age, owner's name, number of entry, &c. will be appended to each animal, as soon as located.

The rule in force at former Fairs, of excluding animals which have already taken prizes of the American Institute, is abolished, and the premiums are now open for competition without reservation.

In a work like this, which is patronized over the whole country, and, in proportion to population, with remarkable equality as to the number of its friends, it cannot be expected that we should fill several pages with the details of these arrangements; nor is it necessary, since they will be so widely diffused through other channels. Suffice it to say that these arrangements are the result of many

years of experience, and a careful study to conciliate the public approbation and to promote the convenience of all who may assist in consummating the patriotic designs of the Institute.

We have room only to express our humble gratification at seeing that a very small proportion, if any, of the funds set apart for premiums, is to be given in *money*. The Trustees or Managers have paid to the agricultural community the compliment to act on the presumption that those who strive at excellence in any of the departments of this most important branch of human industry are actuated by motives far above the sordid hope of *winning a few shipplasters!* Hence they have offered to a nobler ambition the chance of winning an enduring family trophy, or memorial, in the shape of a medal, or piece of plate, or in agricultural works—treasure of as far more intrinsic value than money, as mind, and character, and capacity to be useful, are to be preferred to mere physical strength and the means of sensual gratification.

After all, associations for agricultural improvement will everywhere illustrate their public spirit and usefulness, in exact proportion as their measures tend to inspire among farmers an attachment to and a pride in their pursuit—in proportion as they endow them with a just appreciation of its intellectual requirements, and with a consciousness how much its practical success, as well as the honor of those who follow it, depend on various intelligence as well as on untiring industry and expenditure, liberal but discreet, according to their means.

When public sentiment shall have been rectified, as it will be, gradually, by more salutary systems of education, holders and tillers of the soil will get to have a better knowledge of what is due to themselves, and will take care that all exactions levied on their substance, and deducted from the fruits of their industry, shall be appropriated, *at least in some proportion, and directly, to their own benefit.*

CATERPILLAR AMONG THE SEA-ISLAND COTTON.

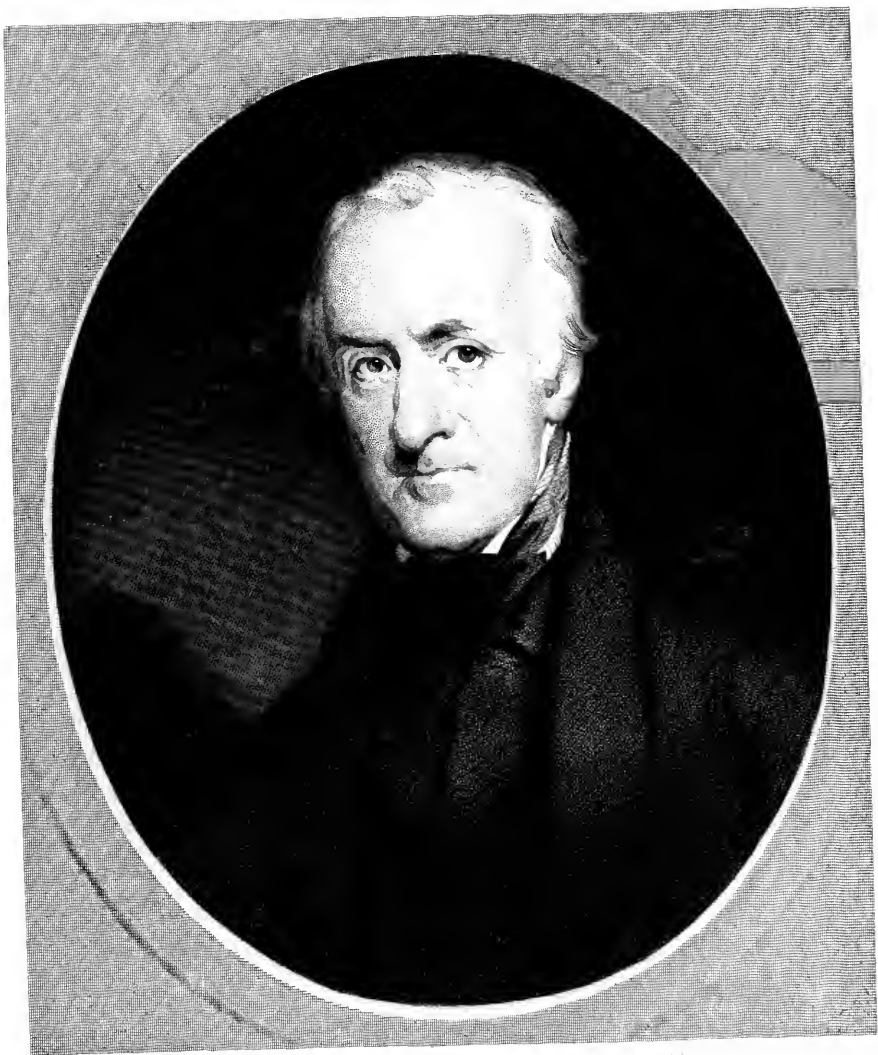
SUGGESTION OF AN ANNUAL MEETING OF AGRICULTURISTS AT SARATOGA, AND AT THE WHITE SULPHUR SPRINGS IN VIRGINIA.

SOUTH CAROLINA, August 3, 1846.

Dear Sir: A slight improvement in health will enable me, I trust, to pass the summer at home. This it is essential to my interests that I should do, as the appearance of the caterpillar renders the destruction of the long cotton crop nearly certain. The enemy has shown himself earlier by three weeks than was ever known, and our cotton fields, from the coldness of the spring, are unusually backward. The time that elapses between the exit of one brood and the presence of another is from 20 to 24 days. Great injury is done by the second generation, but the third "leaves not a wreck behind." About the 1st of September, therefore, we may fairly calculate to look on blighted hopes, with the expectation of ruin, perhaps, to many.

About ten days ago I sent to our Secretary, who resides in Columbia, a number of questions, and begged him to add to them, if he thought proper. As they will be printed, you shall have a copy. I directed him to forward a copy to every U. S. Senator, accompanied by the request that he would cause it to be delivered to the President of the S. A. S. of his State. The one for the New-York Society will be directed to your care.

As there is a large gathering of strangers at the White Sulphur and Saratoga Springs every summer, would it not be advisable to have an annual agricultural meeting at those celebrated watering places? In the attainment of this end, let the State Agricultural Societies of Virginia and New-York, each of course acting independently of the other, arrange some scheme by which the several States represented at the Springs might have an opportunity of showing their disposition



Gen. Macdonnell

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LIFE OF JAMES WADSWORTH

(With a Portrait)

BY PROFESSOR JAMES RENWICK, OF COLUMBIA COLLEGE.

THE late JAMES WADSWORTH was descended from a native of the County Palatine of Durham in England, who was among the earlier settlers of the valley of the Connecticut.

The name of the county which gave birth to his ancestor was perpetuated in the township in Connecticut in which the subject of our Memoir was born. His immediate progenitor was the father of three sons, of whom James was the youngest, and who was born on the 20th April, 1768. We have no details of the pursuits of his boyhood, which, however, were no doubt spent in the alternate occupations of agricultural industry and scholastic discipline, until we find him taking his degree of Bachelor of Arts at Yale College, in the twentieth year of his age.

Before he had thus completed his collegiate education, his father had died, and the property upon which the latter had sustained his family in competence, and by whose products he had been enabled to give his sons the best education which the country could furnish, was now to be divided into three portions. Neither of these, it was obvious, would suffice even for the decent maintenance of an individual, far less for the support of a family. Industry, directed by intelligence, was therefore to be looked to in the place of patrimonial fortune, and when united to enterprise and moral courage, might open a way to wealth. All these requisites were united in the characters of JAMES WADSWORTH and WILLIAM, one of his brothers. At the present day, the sons of families under circumstances similar to those of the Wadsworths, flock to our cities to seek situations at the counter of the retailer, or places at the desk of the counting-house; throng into the schools of medicine or divinity; or embark in the study of legal science. In these lotteries, that one chance in the hundred turns out a prize, in the acquisition of mercantile wealth, the enjoyment of high professional standing, the consciousness of spiritual usefulness, or the attainment of political eminence, is more than the average amount of success. Yet the glitter of the few prizes continues to tempt youth from the pursuits of Agriculture to the waste of their slender patrimonies, the destruction of their health, or the ruin of their

character and morals. JAMES WADSWORTH'S ambition was more wisely directed. He did not see in his superior education the means of escaping from the pursuits of his forefathers, as if rural toil were disgraceful to the man of intelligence, but rather the instrument by which intellect and mental energy might be substituted for rustic manipulation. At that moment, the adoption of the Federal Constitution promised a Government of sufficient strength to maintain supremacy over the Indian tribes bordering upon the settlements of more ancient date, and large tracts of land hitherto held as Indian hunting grounds lay open to purchase under unquestionable titles, derived from cessions by the aborigines to the States within whose chartered limits they lay. Massachusetts and New-York had compromised their claims to the country west of the Seneca Lake; the former acquiring the right of soil, the latter that of jurisdiction; and Massachusetts, in a happy hour for the prosperity of New-York, had sold her wide but apparently valueless estate to the copartnership long conspicuous on the maps of the State of New-York under the name of Phelps and Gorham. This firm, buying at a price which, estimated by the acre at the present day, would be called nominal, contracted from the vast extent of the tract to which they had acquired a title, engagements large for the time, and both for the purpose of diminishing the amount at stake, and realizing early profits, sought to embark others in the speculation as purchasers from them. Among these was Col. WADSWORTH of Hartford, Conn., who from his wealth, and public services in the war of the Revolution, was looked up to by those of his name as their chief. The young Wadsworths, while they were unable to count kin with him, were acknowledged as the descendants of a common ancestor, and he, with the patriarchal feeling which has now become almost obliterated, was willing to extend his patronage to those who bore the same patronymic as himself. To James and his brother William he gave not only sound advice, but what proved to be the most useful aid. He proposed to them that they should take an interest in his remote and almost inaccessible estate, by purchasing a part and becoming his agents for the management of the remainder. It has rarely happened that young men of intelligence, education and sure, although limited capital, have been induced to make such obvious sacrifices for the attainment of a certainly distant, and possibly unattainable benefit. What difficulties beset and long attended them will be understood from our narrative.

The patrimonial property of the two Wadsworths was worth some \$12,000 or \$15,000. It consisted in lands in the township of Durham, Ct. for which there was but little demand, and served rather as the basis of credit than as a moneyed capital. Their purchase was situated in what are now known as the townships of Geneseo and Avon, on the eastern bank of the Genesee River. In the year 1790, when their enterprising journey commenced, the Little Falls of the Mohawk formed the extreme limit of continuous cultivation in the State of New-York. Small clearings were beginning to appear on the German Flats and at Cosby's Manor. The Indian trade enabled a couple of white families to earn a scanty support at each of the two places where Utica and Geneva now stand, and Canandaigua was the seat of the land office of Phelps and Gorham. With these exceptions the whole region was a wilderness, rendered more dreary by the necessary ravages of Sullivan's army, and more dangerous by the rancor which those ravages had excited in the breasts of the warriors of the Five Nations. This rancor was kept up by the promptings of traders issuing from the fortress of Niagara, over which the British flag still floated, and had for its only

soothers the magnanimity of the chiefs who disdained to feel resentment for the woes of open war, and the fears which the inferior warriors entertained of the prowess of the *Long-Knives*. To encounter the perils of this position, and perform the labor of bringing their land into cultivation, the brothers hired a small band of hardy axmen in Connecticut, purchased provisions to maintain them until the first crops should ripen, and provided agricultural implements sufficient for their proposed farm. The whole party, with its heavy incumbrances, ascended the Hudson to Albany, then often the voyage of a week; made the long portage through the pines to Schenectady; embarked in bateaux upon the Mohawk, not yet improved even by the partial operations of the Western Land and Navigation Company; and followed its tortuous course until they reached the limit of continuous settlement. Here cattle were purchased to serve as the foundation of a future stock and for temporary support, and the party was divided into two bands. James continued the laborious task of threading nameless streams, encumbered by wood-drifts and running in shallow channels, while William undertook the still more difficult duty of driving the stock through the pathless forest. Finally the party was again united upon a small savannah on the bank of the Genesee, a spot which, hardly altered in appearance, is now overlooked by a flourishing town and mansions which, if unpretending, unite in the highest degree the refinements and elegances of civilization. Here the bold and gallant bearing of WILLIAM WADSWORTH, united, or we may even say directed by the sagacity, moral courage and strict justice of JAMES, won upon the neighboring chiefs to such a degree as to have made them the instruments by which the enterprise was preserved from almost immediate ruin. A house having been built by the aid of no other implement but the ax, crops were planted and the cattle turned to graze in the rich savannah. The virgin forest which then encumbered much the greater part of the selected portion of the Genesee Flats, was vigorously attacked, and the mighty trees yielded to the Yankee ax. Classic superstition in the events which followed, would have seen the Dryads availing to avenge the destruction of their desecrated groves: for, with the autumn came the enervating and unmanly attacks of the ague. This, to natives of a country where it was unknown, presented such terrors that the hired men broke the conditions of their engagement and hurried as they best could toward the older settlements, leaving the two brothers almost if not quite alone in their log-built cabin. In this position even mere passiveness on the part of their neighbor Big-Tree, the chief of the Indian village on the Genesee, immediately opposite to the settlement of the Wadsworths, might have compelled them to follow their servants; but they now obtained from him ready and efficient aid—an aid not given, however, without satisfactory equivalent, and far more than repaid to his race in their waning fortunes.

With the opening of a new spring, a fresh supply of white laborers was obtained, and whether they were acclimatized or had been familiarized to the endemic disease, no farther interruption occurred in the progress of the clearing.

The Indian corn of their first crop was beaten into meal in a mortar fashioned by the ax from the stump of a gigantic oak, and the pestle was swung as on a spring, from a long and pliant pole. Gradually in the progress of the clearing, the falls of a little stream were reached, where a saw and grist mill, erected by the Wadsworths, formed the nucleus of the now flourishing village of Genesee.

The gradual extension and successful prosecution of the enterprise, together with the duties of the land agency, led to a division of the labors of the two

brothers. Upon William, more robust in frame and more valid in constitution, devolved the direction of their own agricultural labors, and of necessity much of the direction of the business of the land office : while to the lot of James fell the traveling necessary to the successful prosecution of their own business, and for keeping up their connections with the landholders whose concerns were committed to them. To judge of the extent of the labor involved in the first of the branches committed to James, it may be stated that the first plan which presented itself for rendering available the exuberant fertility of their meadows, was the purchase, fattening and sale of cattle. This was the only form in which a surplus agricultural product could be made to yield a remunerative price in the distant and secluded valley in which the Wadsworths had placed themselves. The cattle which formed the subject of this trade were purchased young and lean in the Eastern States, driven to Geneseo, and when fit for market were either again driven to the remote markets of New-York and Philadelphia, or to Hornellsville, on the Tioga branch of the Susquehanna, whence they were transported in the rude embarkations called arks to Baltimore.

The West, although then limited by the Niagara River, had not begun to exercise that fascination which it now does. Men residing on comfortable farms, and delicate females, were not willing to abandon the homes of their youth to try the perils and labors of the wilderness. Purchasers for lands and tenants of farms were, in consequence, to be sought for at the places of their birth, instead of swarming at each returning spring from the native hive. It therefore became one of the tasks assumed by James Wadsworth to travel on horseback through the regions most abounding in population, and endeavor to make sale of the wild lands of his agency, or by the tender of liberal terms acquire tenants to occupy lands already brought into cultivation.

The parties most desirous to remove were those in the least affluent circumstances. Persons, who by the continual division of lands among successive generations, had reached that stage in which the amount of soil held by them was inadequate for their support, and who in a population wholly agricultural could find no room for occupation as laborers. With these the great difficulty to be overcome was to find purchasers for their worn-out and impoverished possessions. To meet this case, lands in the Eastern States were taken in payment for those of the Genesee Valley, or for the outfit necessary to remove families to occupy farms as tenants. The lands thus acquired were in their turn to be sold, or made productive of rent. In the records of operations of this description, it appears that there were instances in which six acres of the virgin soil of the West were given in exchange for a single acre of little better than rock in New-England : and it is now certain that, after an interval of fifty years, the relative value of the two portions is reversed. Thus, while the objects of the speculators in the Genesee Valley were completely answered on the one hand, on the other the parties who purchased from them have multiplied their original capital thirty-six fold.

The success which attended the early operations of the Wadsworths in drawing settlers to their own lands, and those of which they were the agents, attracted the attention of other parties holding property of the same description. It was obvious that it was to the personal address and business talent of James that this success was in a great degree to be attributed. He was in consequence, in the year 1796, requested to undertake a mission to England for the purpose of interesting the capitalists of that country in the lands of the Western District of

New-York. Direct advantage was to be derived by the proprietors of large tracts by the sale at a profit of what they held as a speculation; but more important, although indirect, benefit was to be attained by the whole region, in a manner that will be presently seen.

The circumstances of this mission, and the high character of the parties for whom he was to act, gave him introduction and brought him into contact with persons whose position in European society was best suited to enlarge the views, improve the mind, and polish the manners of a young man of so apt a disposition. While, therefore, he was successful in accomplishing the objects of his mission, he derived no small amount of personal advantage and gratification from his foreign tour. His manner and address must have been from his youth prepossessing, but he would have differed from all his Connecticut brethren had he been free from provincial peculiarities, which, whether the growth of the Ouse, the Trent, the Severn, or the Housatonic—nay, even if generated within the sound of Bow-bell, taint with vulgarity manners in other respects the most gentlemanly. In the subsequent years of Mr. Wadsworth's life, there was no trace of such a defect; and so far as language is concerned, he might have undergone the most severe and surest of tests, that of being able to pass through every region in which the English language is spoken, without exciting an inquiry as to the place of his birth.

The results of Mr. Wadsworth's mission to Europe had effects on the prosperity of the region in which he had fixed his residence little appreciated at the time, and now in a great degree forgotten. It is the fashion of the day to advocate the infinitesimal division of the national domain, and to consider purchases of large contiguous tracts as a public evil. The experience of the State of New-York was in direct opposition to these narrow views. The large estates would have been destined to remain an unproductive wilderness in the hands of their owners, had they not been opened to the view of persons seeking for places of settlement. Hence roads were laid out and worked, bridges built, aids given to the erection of schools and churches, and under the influence of this forced growth, the region between Seneca Lake and the sources of waters running to Lake Erie outstripped in its improvement the more accessible and equally fertile Military Tract, which the gratitude of the State of New-York had divided in small lots among its Revolutionary soldiers. The accumulation of the surplus products of the former region created a necessity for the means of transport, and its population, animated by the ardor of a youthful vigor and directed by minds of no little power, formed the popular force which Clinton wielded with such skill, when the construction of the Erie Canal was decreed, in opposition to the vote of the City of New-York and of the River Counties.

It has been asserted, and the assertion is supported by evidence almost intrinsic, that for thirty years from the time the Pulteney family acquired the estate known by their name, no remittance had been made to them in England, either as income, or as a return for the original investment and the large additional capital expended in opening communications. The condition of the Wadsworth estate was not different, with the exception that the funds destined by the foreign proprietors to the support of agents, served to defray the unostentatious but liberal hospitalities of the American landholders. When the time at length arrived at which the profits of the long struggle were to be reaped, the difference between the foreign and resident owner became apparent. The former had indeed fairly earned them by the employment of his capital, and deserved them for the benefits a

regard for his own interest had induced him to confer. Here, however, his influence ceased. The remittance of his capital and accumulated profits created a vent for the products of the very fields of which it was the price, to an equal amount, and the account was balanced without farther profit or loss to either hand. The Wadsworths, on the other hand, adopted as the principle of their action, that their profits should be reinvested upon the spot, and in this way gave a second impulse to the industry of their neighborhood. Thus, while a part of the original purchase was actually disposed of in fee, a larger quantity of land than was sold was added to the estate. Of this, the death of Gen. William Wadsworth without children left the subject of our Memoir the sole proprietor.

Mr. Wadsworth was probably the only instance, since the breaking out of the Revolutionary contest, of the investment of a fortune accumulated by the industry of a whole life, in agricultural property. In most, if not all, of the other cases in which fortune has been derived from the purchase and sale of land, it has been changed in its investment from the tillable soil, to city lots or moneyed securities. It would be difficult to form an estimate of the enormous magnitude of the amount which has thus been drawn, in the western part of the State of New-York alone, from the support of Agriculture. Flourishing as that region is, imagination can hardly conceive how much more flourishing it might have been had the whole of the profit derived from the rise in the value of its wild lands been reinvested upon the spot.

The estate of the Wadsworths, reserved in compliance with the principle originally adopted, that their capital should not be withdrawn from the region in which it was accumulated, was partly held in their own hands, partly leased, and partly cultivated "upon shares." The Home Farm, cultivated under their own immediate direction, comprises upward of two thousand acres, of which more than half is a rich alluvial *flat* of the Genesee River.— This portion was for many years the only part from which any profit was derived; and to the raising and feeding of cattle, of which mention has already been made, was added the culture of hemp, for which crop the inexhaustible fertility of the soil was admirably adapted. The hilly land which borders the alluvial soil on the east was, in its original state, what is styled an "oak opening," namely, a swelling surface studded with gigantic black oak trees, and free from undergrowth. The latter had been kept down by the fires which the Indians were accustomed to light in it, for the purpose of rendering it a profitable hunting ground. Where this custom is put a stop to, young trees and bushes speedily made their appearance, and unless cultivation of some description be applied, the whole soon becomes a tangled thicket. This description of land was at first considered to be of little value. When, however, the state of the Spanish peninsula led to the importation of considerable flocks of Merino sheep, the Wadsworths were speedily among the largest proprietors of animals of that species, which were fed upon the uplands; and the high price which the fleeces long bore upon the seaboard, sufficed to defray the cost of the tedious transportation to the navigable waters of the Hudson. Experience has shown that the oak openings, so much underrated at first, are better fitted for the growth of wheat than any other soils. But it is not surprising that this valuable property should have so tardily developed as to be considered by some a fortuitous discovery. It was not until the Erie Canal was opened, that wheat would yield a return of the bare freight from the Genesee River to a market, and hence there was no inducement to cultivate more of that grain than could be consumed on

the spot. In spite, however, of the admirable adaptation of the upland of the Home Farm to the production of wheat, grazing was to the very last the principal object. This application to a purpose which might at first sight appear the least profitable was dictated by the prudence of Mr. Wadsworth, who was aware that it was impossible by means of hired labor to cultivate grain on as good terms as could be done by those who held their own plows. For similar reasons root crops never formed a part of his system of husbandry.

The leasehold lands were at first granted to the settlers for the term of two joint lives and the survivor, the parties named being usually the settler and his wife. By mutual agreement these were subsequently changed to leases for a term of years, and this became, from that time, the form of the original contract. These farms usually comprised each about one hundred acres. The rent was in most cases fixed by a money standard, but it was many years before money began to pass from the tenant to the landlord. The convenience of the former demanded that it should be received in the product of the farm, or worked out in labor. It was not until the War of 1812 caused the expenditure of government funds in the Western District of New-York that money made its appearance, and this was in the form of a partially depreciated paper. The establishment of banks speedily followed, and although their charters were doled out as the rewards of partisan politics, or were directly purchased by political corruption, they were, in spite of the taint on their origin, the instruments of no little benefit to the poor landholders and the tenants of small farms.

Larger farms than those of 100 acres were leased for shorter terms, on the conditions of the payment of a share, usually one-third, of the grain crops, and a stipulated sum for the portions not under the plow. The rotation of the crops on property of this description, and the manner of cultivation, required much individual attention from the proprietor, and, although more profitable to him than lands leased in the other manner, were far more troublesome to manage.

In the collection of his rents, Mr. Wadsworth looked for the same punctuality and good faith from his tenants that he was accustomed to exhibit in his own dealings with others. Hence, with the improvident or careless, he gained the reputation of severity. That this was unmerited, none acquainted with his active benevolence and equanimity of temper can doubt. The knowledge on the part of his tenants of the steadiness of his course in this respect was, to the industrious, rather a benefit than an injury, for it compelled them to a close calculation of their profits: and the requirement of punctuality in payment prevented the careless from accumulating debts beyond their ability to discharge.

Many of the farms held for long terms of years reverted to Mr. Wadsworth before his death; and, while the land itself was generally in good order, the tenants had, for the most part, made such profit from the occupation as to be in comfortable circumstances. From inquiries and comparisons made upon the spot it was inferred that the tenants of his estate were upon the whole more successful in their pursuits, enjoyed a greater share of comfort, and laid by larger profits than those who purchased upon credit lands of equal quality in the neighborhood.

Mr. Wadsworth married, in the year 1804, Naomi Wolcott, of East Windsor, Connecticut. By this marriage he had several children, three of whom survive him. In his wife he had the good fortune to meet with tastes and disposition congenial to his own; and those who had the good fortune to enjoy her acquaintance still speak in the highest terms of her worth. Under her inspection and management, under circumstances that all who have attempted housekeeping on

a liberal scale in new settlements will know to be those of difficulty, the mansion at Geneseo became a model of well-ordered, generous, and yet unostentatious hospitality.

The loss of his wife, of his brother, and of a daughter who had just reached the age of womanhood, and been fortunately married, shed a gloom over some of his later years; but he still took pleasure in collecting a circle of select friends at his residence during the season at which Geneseo was readily accessible. Intelligent, well informed, and fond of intellectual converse, he possessed in a high degree the happy talent of drawing out his guests, and bringing their several talents and acquirements into requisition for their mutual entertainment. The visitors of his house, hence, never felt the pains of *ennui*; and while he laid no restriction upon their engaging in games of chance or skill, the customary resource of vacant minds in country residences, it is said that no desire for amusements of this description was felt by his occasional inmates for the last twenty years of his life.

The success which attended Mr. Wadsworth's career was due in a great degree to his regularity and skill as a man of business. We have seen how actively he was employed for many years in bringing his property into a productive state. In his later years he, without noise or apparent effort, directed the cultivation of the large farm retained in his own hands, superintended the numerous tracts let upon shares, and gave due attention to his interests in the leases for long terms of years, while he at the same time fulfilled with punctilious exactitude the duties of agent for several considerable estates. All this was effected with so much ease and method, that to his visitors he had the air of being entirely at leisure.

Habits of this description gave him, during the winter and times unfavorable for traveling, the command of many hours in each day. These were employed by him in reading and literary correspondence. His favorite study was political economy, but he did not fail to keep himself informed of the progress of all the physical sciences. He, in fact, furnished a singular instance of a person who had closed his elementary education, and entered into a life of great activity, at a period when the very names of chemistry, geology and mineralogy were yet unknown in our colleges; and had notwithstanding, and at a distance from all the usual facilities, contrived to acquire as much of them as is considered necessary as an accomplishment in our modern schemes of instruction.

The interest he took in these pursuits was enhanced by the clear view which he took of their power of being usefully applied to Agriculture; and while, upon his own lands, the necessity of renovating the soil appeared in a perspective too remote to affect his descendants for several generations, he notwithstanding felt a generous impulse to bring the aid of science to those less fortunately situated. Selected tracts on scientific subjects in general, and others specially devoted to the application of science to Agriculture, were for this purpose printed at his expense for gratuitous distribution. In many cases the fact of his intervention in these publications remained unknown, except to himself and the editors. Other articles of less extent he caused to be inserted at his expense, not only in agricultural periodicals, but also in the newspapers circulating among the farmers of the State.

The utility of these efforts was evidently limited by the want of education among the persons for whose benefit they were intended: and a knowledge of this fact led to the direction of his attention to the extension and improvement

of the school system of the State. The subject of the education of the body of the people thus became the absorbing interest of his later years. In his reflections on this subject he formed the conclusion that the important point was to form a taste for reading, and provide suitable books; and it was among his projects to give to subjects of instruction the popular form of the newspaper. To carry this into effect would have required more time than he could have personally devoted to it, and he found no one equally enthusiastic in the cause with himself. Failing in this, he suggested the plan of the school district libraries; and, when this had received the sanction of the State Legislature, his influence was exerted in procuring the printing of an annual series of suitable works, and his taste consulted in the choice of a competent editor. To insure the publication of the series thus selected, he became responsible for the sums directed by the law to be raised in school districts in his own neighborhood—of which in most cases a part, and in some the whole, became an actual contribution to the cause of education from his private purse. He had thus the consciousness of bestowing a charity of the best description, and in the most unostentatious manner; for, so far as the publishers or the public could learn, the funds appeared to be raised in the usual manner, by subscription or assessment among the inhabitants of the district.

His influence was more directly and openly exerted in urging the enactment of a law by which the Controller of the State of New-York was authorized to purchase and send to every school district in the State a copy of Hall's "Lectures on Teaching." Finally, aware of the want of text-books specially adapted to the use of the common schools, he placed in trust a sum sufficient to call the best talents into competition, to be paid to the authors of the best elementary treatises on certain specified subjects. After much delay on the part of the very distinguished gentlemen who were invested with the power of awarding the prize, the money was paid to the successful candidates: but, by this time, the want he had desired to supply had been satisfied by individual enterprise, and the successful treatises have not been published. In the selection of his umpires, Mr. Wadsworth had regard to a character beyond suspicion of improper influence, and intelligence of the highest order. It was not his fault that they undertook a duty which their important avocations as statesmen prevented them from performing for a long time, and then, it is believed, by deputy. Nor can we blame him if the works exhibited for competition were so inferior in quality, or the judgment in awarding the prizes so imperfect that the authors of the preferred treatises have not yet been able to find a publisher bold enough to risk his capital on the faith of the award.

His plan had embraced the publication at his own cost of the successful compositions. The necessity of such publication having been done away with by private enterprise, the fund he had set apart for this purpose was applied, by his directions, to the publication of a work drawn up by Professor Nott and Mr. Emerson, entitled "The School and the Schoolmaster."

With views of the same description, he encouraged the access of lecturers on subjects of utility to his neighborhood, and the sums with which he eked out their remuneration from their auditors reached, in the aggregate, a large amount.

His position as a large landholder, and the agent of large estates, led to continual calls upon him to contribute to the establishment of places of public worship, to the building of school-houses, and to enterprises of similar character. In his contributions to such objects, no complaint can be made of his not being, in

the aggregate, even more bountiful than was demanded by his position. But he chose to be governed by his own views of the useful to the bodies as well as the souls of his tenants and poorer neighbors, and was in consequence more disposed to be liberal to schools than to churches. He, in fact, was occasionally heard to complain that the clergy of his neighborhood were more solicitous to enhance their own importance in the assemblies or convocations of their sects, than to advance the intelligence, whether of spiritual or temporal matters, in their flocks; and, in no little sorrow, pointed out to his guests, as an illustration, four spires surmounting as many comfortable churches, at the four corners of a cross-road in view from his house, which overhung a school edifice that a good farmer would not have considered an adequate shelter for his swine.

Educated in the strict tenets of Connecticut Calvinism, the duty of aiding his tenantry in building and supporting places of worship brought him into contact with clergy of all denominations, and he became entirely free from any sectarian bias. Those who cannot conceive religion to exist without bigotry, and heard his remarks on the apathy and even the opposition exhibited by some of his clerical neighbors to his efforts to improve the schools, have not failed to cast aspersions on his faith. No aspersion can possibly be founded on less tenable grounds. It was rarely that he entered upon religious topics. He felt them to be too sacred for the discussion of mixed companies; and, while he neither invited nor repressed it among his guests, seldom took a share himself. But there are those who, in more close relations of intimacy, have become aware that the orthodox impressions of his youth were not obliterated, but only rendered more catholic in their tendency. Religious forms and observances were treated by him with marked respect, and he was punctual in his attendance upon the stated Sunday service of the Presbyterian Church during the early years of his residence at Geneseo, and toward the close of his life upon those of the Episcopal Church.

In his efforts for the promotion of education and the dissemination of knowledge among the people of the State, Mr. Wadsworth studiously avoided publicity. He appears to have shrunk with instinctive modesty from any mention of his name as a public benefactor. Many of the facts which have just been stated have been reached with difficulty, and it may be inferred that they are far from being a complete list of the benefits he conferred upon his fellow-men.

The same sensitiveness seems to have prevented him from seeking political distinction, or taking an active share in party struggles. So long as the Federal party continued to have an existence, he gave it his vote; and his example, unattended by any attempt to exert a direct influence, had, no doubt, its due influence on his neighbors. In the frequent divisions and nice shades of distinction that arose in the triumphant Republican party, he took no part, with the exception that all his views were strictly conservative. He gave, to the last, the best possible proof of his reliance upon the sufficiency of our democratic institutions to insure the enjoyment of life, personal liberty, and the security of property, by continuing the investment of his estate in land, although there were times at which he might have realized vast sums by its sale.

Thus exempt from the bitterness that occasionally grows out of party feeling, he enjoyed the esteem and personal intimacy of those of all parties who, by the extent of their views, rose from the character of mere partisan leaders to that of statesmen.

The correspondence of Mr. Wadsworth was necessarily voluminous, from the amount of the interests which he either possessed or represented. But, in the

later years of his life, it took a more extended form, and to the details of mere business he added a series of communications on subjects of literature and science, in particular relation to his darling scheme of extending and improving the means of popular education. His letters are marked with the precision of the man of business and the pure diction of the scholar, and it is said that they were occasionally extended into well digested essays on the subjects he had so much at heart. Of these, but one has seen the light in a printed form. This was a letter on the subject of civilizing the Indians, which appeared in the newspapers of the day. The publication, however, took place without his knowledge, and, had he been consulted, he would probably have refused his assent. The distinguished statesman to whom it was addressed was, no doubt, of opinion that he had no right to lock up so valuable a communication from the public, on whom it was well calculated to produce a powerful impression, and that favorable to the interests of a race which, unless some powerful agency intervene, seems destined to destruction.

We have already spoken, in part, of the manner in which his home farm was conducted. Devoting it chiefly to grazing, the sources from which his stock was derived varied with the progress of settlement. Drawn at first from New-England, the supplies of young neat-cattle were finally obtained from Ohio, and States still farther west. This, of course, did not preclude the breeding of stock upon his own farm; and here he manifested a sense of practical utility, by which it would have been well had others, who have devoted large sums to the obtaining of foreign breeds, been influenced. The breed of his native valley of the Connecticut was that which he preferred, and upon his rich pastures it has attained an excellence which may be envied by those who have resorted to foreign races. It so happens that the stock of the earlier settlers of New-England was, from the fact of all the vessels taking their final departure from the south-western ports of the mother country, derived from the very county, Devonshire, where the best of the improved breeds of England have their origin. This has been thoroughly acclimatized, and although it may have degenerated in barren soils, and for want of care, the valley of the Connecticut still possesses it, rather improved than fallen from its original good qualities.

His attention to fine-wooled sheep was governed by similar practical and judicious views. He had no share in the mania, under the influence of which Merino rams were sought for at the price of thousands of dollars; but, no sooner did the price fall to reasonable limits, than he became the possessor of the largest flock in the State; and he did not condemn it to the butcher when the unreasonable expectations of sudden and enormous profits, which others entertained, were proved to be fallacious.

Besides neat-cattle and sheep, the breeding of mules formed for several years an object of his attention.

It might have been expected that with such extensive concerns to manage as a land agent and landlord, not to mention the great extent of his own farm, cultivation on a small scale could have created but little interest in his breast. But this was not so, for he delighted in directing the culture of his garden, and in propagating the finest descriptions of fruit adapted to the climate, although he eschewed the costly luxury of the forcing-house.

One peculiarity marks and distinguishes his possessions not only from those of small proprietors, but from those of the greater part of large landholders. This is, the manner in which they are studded with trees, isolated and in clumps, or

surrounded and divided by belts. In this respect their aspect is that of the most admired portions of England, with this difference in their favor—that the trees are not planted by the hand of man, but continue to exhibit the grandeur of form and dimensions which they had acquired in the primeval forest. In England, according to his own statement, he learned to love trees, ere it was too late to prevent their entire destruction on his own domains by the unsparing ax of the pioneer of cultivation. He moreover was taught that a time is finally reached in the progress of population when timber is of more value than any other product, even of the most fertile arable soils. With this love of the beauty of trees as a mere object of sight, and sense of their prospective value, he willingly encountered the prejudice which represents them as injuring the meadows, whether for the scythe or for pasture, by their shade. To his surprise he found no diminution in the product of hay in his sheltered savannah, while to his stock, in the summer of our climate, the umbrageous shelter proved of incalculable benefit. More particularly his rich alluvial land, extended in the form of a peninsula from a narrow isthmus, has been protected from encroachment and from the wash of the river by the native belt of wood which surrounds it.

Few as are the events which mark epochs in the quiet and successfully industrious life of Mr. Wadsworth, it would be possible to dilate at great length upon these and other points in which his example and experience might be of great value to the proprietor and cultivator of land. We have, however, already exceeded the limits to which we are confined, and must hasten to a conclusion.

In 1843, Mr. Wadsworth became sensible of a decline in his health. His disorder soon exhibited symptoms which demonstrated its probable incurable nature. The certainty of his dissolution at no distant day became apparent to him, and although he yielded to the wishes of his friends and children, by trying a change of scene and air, he was himself aware how fruitless must be the attempt. The slow and gradual approach of death he awaited with equanimity and fortitude, and although he no longer manifested his accustomed interest in his favorite active pursuits, his intercourse with his friends was not devoid of its usual cheerfulness, which was damped rather by their anxieties than by his own. Returning to his residence at Geneseo, he there died on the 7th June, 1844.

CHEVIOT SHEEP, AND OTHER DOMESTIC ANIMALS, AT MARSHFIELD.

TO JOHN S. SKINNER, Editor of 'The Farmers' Library':

SPEAKING of sheep in your August No. you say, "there are some strong reasons to believe that, for our mountain ranges, the Cheviot sheep of Scotland would be most profitable." I agree with your Delaware friend in saying the land in Western Virginia, which can be purchased so very cheap, is the very country for sheep. But you are wrong in saying the pure Cheviots have not been imported. On a late visit to Marshfield, we found that great lover of his country, DANIEL WEBSTER, had imported a flock of 20 pure Cheviots, and they were doing very well, as were also some South-Downs. We saw also, at his farm, Ayrshires bred from his imported stock, and certainly they have not deteriorated under the judicious management at Marshfield. We also saw his fine breed of "Mackey" pigs, and handsomer pigs are not to be found in the length or breadth of our land. The sire of his stock is now 12 years old, and a most respectable pig he is. He has been sent for to almost every county in the good Bay State, and his reputation is so good and well known that he has even visited New-Hampshire, where one finds the marks of his having been, by the beautiful white progeny that have followed his steps. In truth, Mr. Webster deserves high commendation for his praiseworthy efforts to benefit the agricultural interest of his country. C.

WHEAT—ITS DISEASES, &c. &c.

MR. EDITOR: I feel impelled by a sense of duty to respond to the call you have made on me to communicate an article on the subject of wheat; but let me say to you candidly, that you have placed too high an estimate on my ability to discharge such a duty. In truth, I had meditated throwing out something to elicit information from other sources, as to what is best for wheat growers to do in this part of the country, where wheat is the staple. Clouds and darkness rest upon our vocation; the cultivation of wheat has become a most uncertain thing; the disasters of the present year will not soon be forgotten. We possess a soil, as you have stated, heretofore celebrated for producing "White Wheat;" but the failure of all the smooth varieties is deplorable—and there are many of them cultivated here. So far as my inquiries have extended, there cannot be more than a third of a crop, and that, too, of very inferior quality. Fortunately, many have seeded a portion of Mediterranean or German wheat, and some few have grown an entire crop; but there are numbers who have placed their reliance exclusively on white wheats, possessing soils particularly adapted to their growth: among these your correspondent happens to be a sufferer. The Mediterranean has been exempt from the disasters which assailed other varieties, and will make a fair crop, though not a great crop. It has also improved much in quality since its introduction here, having become whiter and the rind thinner. It is a remarkable fact that this wheat will bear early seeding and escape the ravages of the fly, or, if assailed, possesses some recuperative energy, to make a crop. I have always had a prejudice against bearded wheat, but have almost made up my mind to try the Mediterranean in part, for my next crop. Facts are wanted, and the first question for consideration is—What is the best variety of wheat to grow when the seasons are so frequently unfavorable for the production of a fair crop. Unhappily for the community of farmers, much humbug is practiced about seed, and many puffs are put forth about this or that new variety, claiming an exemption from the ills to which the plant is subject. That excellent man, old John Singleton, told me, nearly thirty years ago, that he once collected and seeded twelve varieties of wheat the same season; that among the number, one had a solid stalk, of which he expected much, but the whole twelve were attacked with fly, and he held the doctrine that none was exempt.

This conversation was the result of an inquiry addressed to him on my part, whether he intended to procure any of *this new variety of wheat*, which claimed exemption from the ravages of the fly? No sir; you young men may try it; I want faith in such reports. It may be here remarked, that he was, or rather had been, a great experimental farmer. This is an apt illustration of some of the humbugs perpetrated in these our days. Perhaps the wheat alluded to was the "Lawler," which had its day, and afterward reappeared under a new name—not as old books do sometimes, "*multo emendatior et correctior*"—but quite a new variety; and, as you well know, Mr. Editor, there is much in a name, it was christened "Talavera," a place rendered illustrious as the theatre of a great battle. But does any body hear of it now, as possessing claims to preëminence, under either name?

All the varieties of wheat are proper subjects for discussion, and many farmers, old as well as young, may be saved much mortification and loss. The first great desideratum is, early maturity, thereby diminishing the chances of disaster. There are many varieties of smooth white wheat, possessing the qualifications for making the best family flour, and also of being very productive, *when the season suits*; but they are too late. The old Washington or Virginia White, for many, many years almost exclusively grown on the salt water lands of the Eastern Shore, gave a character to our country for producing the best white wheat. The Point lands having a fine friable mould, intermixed with shells, and whose substratum is a rich, unctuous yellow clay, (about the color of an old-fashioned gold watch,) produced this wheat in its greatest perfection; and al-

though the still white-oak lands in the immediate vicinity—within the same inclosure—would produce a fine crop, yet, nevertheless, it was essential constantly to recur to the former for seed, or depreciation would be the inevitable result. For productiveness, quality and quantity of flour, it has never been surpassed, if equaled: but it has disappeared from among us: it had to be abandoned ultimately, to the regret of many, on account of the great uncertainty of making a crop, its great liability to rust, and consequent deterioration of grain. This wheat never succeeded well except in a saline atmosphere, on farms bordering on salt water; and I apprehend that the successful planter and farmer at “Doden” is mistaken in supposing that the beautiful white wheat which he grows, and always commanding the top of the market, to be the old Virginia White.

The old rare-ripe, a beautiful white wheat, fine for flour, the earliest variety then known, and perhaps still so, has been abandoned years ago—not, however, for the causes last assigned. It was too uncertain, the straw very short, and most difficult to bind on account of its weakness: and finally, its great liability to smut, when the means of prevention or modification were neither well understood nor practiced.

The Pennsylvania white chaff bearded, grown here for some years, had a beautiful white grain, but was never known, under any circumstances, to make a maximum crop: it has passed away like a “summer’s dream.”

The New-York improved White Flint, to which the name of “Harmon” has given celebrity, possesses high qualifications, but has also entailed on it the defect of being too late.

The “Polish.”—I procured for seed some of the first crop grown in this country; and that, too, at an unusually high figure. It was cultivated successfully by me for several years, but had to yield to another: this may be classed with the preceding, having similar qualifications and defects.

The “Rock.”—A learned Judge of the Court of Appeals and a good farmer, now no more, told me several years ago, that this was a humbug. I have never seen a field of it growing; it has, however, been cultivated with some success in one section of our county, and much esteemed by a few. Whether its great failure this disastrous year will cause its abandonment, remains to be seen. No variety could be less suited to such a season.

The “Etrurian,” introduced by the gallant old Com. Stewart, the White Kloss blue stem, the “Hershey,” are now being grown, and all have the merit of being early smooth varieties. Perhaps the first named is the earliest. I speak of this from report only, and that, too, limited. The grain is represented to be beautifully white: that it escaped the rust, but was excessively injured by fly. I have seen printed statements claiming almost total exemption from fly for this wheat—in short, fly-proof. I have it in contemplation to try some of it for my next crop. The blue stem White Kloss was ushered in the past season, as the “*ne plus ultra*.” I procured some for seed, and it was placed side by side with the Hershey, and under equal circumstances: they ripened about the same time; but the Hessian and the rust contended for the empire over both, and seemed to hold equal dominion; which suffered most ’twas difficult to determine. It may be added, that scab and smut brought up the rear, to aid in the work of destruction. I have heard of fair crops on several farms being made of both these varieties.

An enterprising young farmer in my neighborhood sowed two bushels of each of four varieties, side by side, to test their merits—the “Etrurian,” “White Kloss,” China, or Hardware, and a large red bearded, obtained from New-York. He stated to me that the White Kloss beat them all considerably. The Etrurian was literally demolished by fly. The China produced very inferior grain, and less in quantity. So far as this season is concerned, the testimonies are strongest in behalf of the Kloss wheat over other smooth varieties. Such, however, has been the result of my inquiries.

I introduced the Hershey here some five or six years ago, and grew it with much success for several crops; in fact, with more success than any other wheat: but it is passing away. I have come to the conclusion, Mr. Editor, that frequent change of seed is necessary, and that no variety can be successfully cultivated on the same farm beyond a few years. Almost all the above named have been grown by me, and every change made has generally proved advantageous.

But to return to the Mediterranean: this seems to be an exception; it has been grown by a few for ten or twelve years, and has evidently improved in quality. For several years numbers have seeded it because of its being more certain to make a crop, under all circumstances. It is remarkable in another respect, its exemption from rust when other wheat is most seriously injured. I know of one case where the Hershey was actually cut before the Mediterranean, because the former had become rusty, and the latter was entirely free. This wheat will doubtless be very generally seeded here. But what is to be done for the best white family flour? Our Baltimore millers have become extremely fastidious on this point. The Hershey, which makes as good bread as any wheat in our country, was decried the past season because, forsooth, the loaf had not the snowy whiteness of the old Virginia or White Flint, but has a rich cream color. The best reply to this is afforded in the appropriate language of the Mantuan bard—"Nimium ne crede colori."

But of the Diseases of Wheat—How is that most formidable enemy, the Hessian, to be combated? That the eggs of the parent fly are deposited on the upper surface of the blade, and very low down, too, where the blades begin to branch, cannot admit of a doubt. And if, in *that stage*, they could be eaten off by sheep and young cattle, it would cause their destruction. This remedy is suggested in the "ponderous work" to which you allude, and by very high authority, as an argument for early seeding; but it is a nice point to hit. But what is the next stage of this destroyer of the hopes of the farmer? If the weather be warm, as is the case when you seed early, the egg is soon hatched and a very minute worm is the product, which descends within the plant and places itself below the surface of the earth, and beyond the reach of the teeth of animals intended to graze it off. Any man who wishes to examine the condition of the insect must take out his knife and scoop out or cut round the plant below the surface, and he will then find the chrysalis. In the subsequent stages of the wheat plant, in spring, it may be found above ground, and even above the first joint, both in the chrysalis and flax-seed state. After the descent is made, perhaps, the tread of heavy beasts, or the passing over of a very heavy roller, might destroy many, the surface of the earth being at the time favorable for such an operation. All my attempts at making wheat, seeded in September, have proved failures from the depredations of the *fly*. It is proper, however, to state the fact that I have never grazed, having always had a reluctance to see stock grazing on a growing crop. But I have heard of success attending it on several occasions. The best time for seeding, in our latitude, to avoid the attacks of both fall and spring fly, may be stated from the fifth to the twentieth of October. But, if about the first of October there be a fall of rain, and a cool change supervenes, this may be regarded as the best condition of things to escape the destroyer, and the work should go on forthwith. The present year has defied all the usual precautions, even in the strongest lands; for wheat seeded from the tenth to the middle of the month was, with me, the most injured. This is not, however, usually the case.

The rust is the next most formidable enemy, and I am not certain that as much loss has been sustained during the course of my agricultural life from this cause as from fly. It would seem, however, from the statement of facts which have appeared in agricultural papers, that the application of charcoal is a preventive. So powerfully impressed am I with this belief, that it is my purpose the ensuing winter, "*Deo volente*," to attempt largely the conversion of pine-wood into charcoal. I have also heard from unquestionable authority of another manure, which has always proved effectual; but this must necessarily be confined to certain localities.

Mr. Editor, you have doubtless seen frequently in the tributaries of the Chesapeake Bay, the grass growing in water from two to four feet deep, in immense quantities; and the little sand-snipe and kildeers running about on its surface. Some of our farmers haul up this salt-water grass. Having previously plowed up a headland, the grass is carted thereon, and covered up with the plowed earth. It is very soon decomposed, and forms an admirable compost. It has been observed that the portions of a field dressed with this manure will be entirely free from rust, while other parts to which the contents of the farm-yard have been applied will be much diseased with this pest of the farmer. Its action in other respects is unsurpassed. This suggestion may be of some value to your Long-

Island farmers, who are so liberal in their expenditures for manure; and also in various other localities.*

The truth is, too much dependence is placed on growing wheat and corn in this section of the country. They are our staples; and the great uncertainty attending the growth of the former imperiously demands the substitution, in part, of some other agricultural product. Your suggestion, therefore, is of great value on the subject of barley, and merits especial consideration. I have no experience in growing this grain, and earnestly solicit information. Among the apprehensions that may be entertained respecting this product, can we always get a reasonable price for it? Vast quantities are consumed in England for malt liquors, but we are not a beer-drinking people. The Arabs sustain, or formerly did, their unrivaled race of horses on this grain; and it might be, perhaps, so employed in our own country.† It is stated in the Domestic Encyclopædia that "calcareous soils which have been long in cultivation, and frequently manured, will yield abundant crops of barley." Such is emphatically the condition of this wheat-growing region; whether they possess the capacity for producing barley abundantly, remains to be proved. We want light.

OF STEEPS.—You are aware that I tried the "Chemical Solution," in the hope that something had been found out as an antidote to some of the ills to which the farmer is subject. A letter of inquiry was addressed to me by the vender of the article, respecting its action; and a true statement was made as to the condition of the wheat at that time. Unfortunately, an extract from this letter, which was never designed to meet the public eye, was put forth prematurely, and led some into error. It had the effect of bringing up the wheat earlier, and of producing a striking difference through the winter and spring; but, as harvest approached, the superiority was scarcely, if at all, perceptible. But the experiment resulted in one very unhappy effect—the wheat thus treated had considerable smut in it; while, in its immediate vicinity, that which had been limed and brined, had not a smut-head. Various and conflicting opinions have been published as to the mode of preventing this disease: it is a serious evil, and merits the closest attention of the farmer. I had for some years washed my seed-wheat in strong brine, and then applied lime recently slaked. It is true that, after diligent search, a little smut would occasionally be found, but it was too unimportant to merit notice. Two years ago I was tempted to depart from this course, by reading Mr. Ellsworth's Report on this subject, and other authorities. The wheat was accordingly permitted to remain in pickle through the night, and the next morning limed and seeded. It did not seem to me to germinate as well as by the former process, and was not so healthy and vigorous in its early growth. And what appeared to me conclusive of the fact was, that not liking, on two occasions, to put my wheat in soak in the evening, being apprehensive of rain the next day, and then necessarily merely washing and liming, there was an obvious superiority in the appearance of the wheat thus treated. The past season, as you are already aware, the Glauber salt was employed exclusively, and much smut was the result. Another farmer of this county had the same result from its use.

It is unpleasant to differ from great names and high authority, but there can be no impropriety in every man giving the result of his own observation and experience. I have no particular theory to establish, and am ready to adopt what-

[* We are strongly persuaded that if this grass, as we have seen it about the head of West River, were spread over the ground of fields and gardens, quite thinly, soon after the crop is above ground, and weeded, no other cultivation would be necessary. This covering of salt grass, free from seed, would keep down the grass and keep the land moist, letting through the rain and shutting out the sun from the ground. It might easily be tried in gardens, at least. Hogs are very fond of it—whether for the sake of the salt, or for any nourishment it may contain, this dependent never understood. Very large boat-loads were to be had in a very short time; and being as valuable as manure, as stated by our correspondent, we are quite sure that Long Island farmers would send miles for it; while on West River we never saw it gathered up from the water, except a few boat-loads—though some do haul up the drier, and, as we should think, the much less valuable sea oar, or sea ooze, or whatever be the proper name. *Ed. Farm. Lib.*]

[† It is much used as food for stock in New-York. Mr. BELL, of Morrisania, a knowing Scotch farmer, values it highly, and uses it freely in that way. *Ed. Farm. Lib.*]

ever comes well authenticated. Some years ago I read an essay which emanated from the Society of Useful Knowledge in England, by a Mr. Hayward, in which it was stated that to sow wheat of the preceding year was an effectual preventive of smut. Not long since, conversing with an old Bay-side farmer, he remarked incidentally that he had no opinion of steeps curing smut. There was but one way in his opinion—sowing wheat two years old. “Have you ever tried it?” said I. “Yes, and I had no smut.” This is the only case that has come to my knowledge of its trial in this country. This man never peeped into an agricultural journal in his life; and, if I were to propose to him a subscription to THE FARMERS’ LIBRARY, he would set me down as demented. Important facts in Agriculture are often obtained from humble sources, and such a fact as the above is worthy of being recorded. Attention to details is indispensable in all farming operations—success largely depends upon it. I will not trouble you with my simple process, having already occupied too much space.

For the honor of our Shore, I will trespass a moment longer. A member of our Board recently spent a night with a venerable man—Gen. Potter, of Caroline—now far declined in the vale of life. In the course of conversation the General said to him that, many years ago, the British Government appointed an agent to visit the various wheat-growing regions of the earth, to examine their relative merits. The aforesaid agent was at his house, and remarked to him that, after traveling over Europe and the United States, he had come to the conclusion that the best wheat he had ever seen grew on the Eastern Shore of Maryland. This was, doubtless, in those days when the old Virginia white wheat produced such beautiful and abundant crops. And must we now be reduced to the necessity of growing the dark, thick-skinned Mediterranean, to be certain of living? What a calamity!

Most respectfully, yours,

THE FARMER OF OTWELL.

☞ Seeing that, in the culture of wheat, early maturity is a desideratum, there would appear to be no doubt of the importance of obtaining seed-wheat of the best quality from *as far north as possible*; and this might easily be done by farmers uniting to engage or import it, through the agency of mercantile houses trading with the north of Europe.

No fact is better known than the rapid growth of all plants in high latitudes. Even in our northernmost States, and in Canada, the burst of spring, the splendor of summer, and the maturity and incipient decay of autumn, follow each other with a swiftness scarcely credible. It is farther observed by the same English writer on this subject (and is not the observation equally applicable to our own country?) that

“The corn [grain] sown to-day is in a very few weeks ready for the sickle; and the higher the latitude where it can be made to grow, the shorter is the period it requires for its growth and ripening. Corn which has been grown in the extreme north, when used as seed in a southern country, gives its first produce more speedily, ripening in a much shorter time, although at a second sowing it loses this quality. This fact has been recognized, and is acted upon pretty extensively in this country, it being commonly recommended to obtain seed from colder situations than those in which it is intended to be sown. In Sweden, corn is annually brought for seed from Torneo (in the north of the gulf of Bothnia, and almost within the arctic circle), and sown in lands so much exposed that the sowing time is thrown so late that corn, excepting from seed thus obtained, has no time to ripen. Districts formerly, on this account, utterly barren, are thus rendered fruitful.”

It would be very easy to obtain seed-wheat from Canada, at least, or from Maine, if not from northern Europe.

On the principle here advanced, the Irish import their flax-seed from Riga. Vegetables, as well as animals, acquire habits suited to the climates where they are raised; which habits are transmissible for some years after emigration, but are sooner or later lost, in conformity with that law of Nature under which the climate will ultimately change all animal and vegetable productions, and coerce them to conform to its superior force. Even on the human system, the author of *Vestiges of Creation* remarks that

“the style of living is ascertained to have a powerful effect in modifying the human figure in the course of generations, and this even in its osseous structure.”

Has nobody observed that the children of poor people, who lead a precarious life, subsisting on fish and oysters and clams, in piney wood, along creek shores, have generally dead-looking, white hair?

The Cuba tobacco loses its peculiar fragrance, more and more, on being transplanted to a
(353). 11

foreign soil and climate, until, in two, or, at most, three years, its fine odor and other characteristics disappear. So is it with wheat. But how easy for men who disdain to surrender themselves to that *vis inertia*, that sloth, which is so apt to overcome—shall we write it?—farmers, above all people!—how easy for such men to supply themselves, as occasion may demand, with that change of seed which, it cannot be denied, sometimes gives capacity to resist some unpropitious influence of climate, or disastrous ravages of the countless tribe of insects, to which the God of Nature has given the same right that man enjoys to derive nourishment from plants and animals, and to some of which “even man himself pays tribute with his blood.”

[*Ed. Farm. Lib*]

CULTURE OF SILK.

MR. EDITOR: In looking through a recent French work, I met with an article entitled “Failure in the Attempt to grow Silk in the United States, and the Reasons for it.” Though it might readily be shown, in the neighborhood of Macon, Geo. and elsewhere, that the author is mistaken in the assumption that we have failed in the introduction of the silk culture, yet, as his essay contains many sound, practical views and, withal, some novelty, I have bestowed an idle hour on its translation, in the hope that it may prove acceptable and useful to such of your patriotic readers as are determined to persevere in establishing for their country a product for which she annually pays \$10,000,000 at least to foreigners. Let them hear the judgment of those who had begun to dread their rivalry.

F. G. S.

“FAILURE IN THE ATTEMPT TO GROW SILK IN THE UNITED STATES.—It is but a few years since the United States, jealous of our success in the production of silk, endeavored to introduce its cultivation there. In many parts of the Union, particularly in the Middle and Southern States, immense plantations of the mulberry were made. The soil was so fertile, and the planters so energetic, that we had reason to fear that the result for us would soon be a formidable competition. And was there not, in fact, ground for apprehension in seeing one of our national products thus attracting the attention of a people never turned aside by difficulties, and so ardent in the prosecution of novel enterprises? Hence it was with regret that we witnessed the departure from our shores of vessels laden with mulberry-trees and barrels of silk-worm eggs; for faithful to their habits of enormous speculation, the Americans planted *forests* of mulberries, and to this is their failure to be attributed. If what we learn be true, the production of silk in the United States is now hopeless: the trees are being grubbed up and the filatures closed. The discouragement is so complete that notwithstanding the vast scale of some of their establishments, the product this year in cocoons will scarcely reach 180,000 kilogrammes. We may now continue, without danger of competition, to draw annually from the United States some \$10,000,000 in exchange for our silks.

“Let us now endeavor to account for these disastrous results. We at once perceive a capital error in the exaggerated extent of their plantations and filatures; and it is held *apropos* to recall a truth that has been too often misunderstood: *The production of silk in no wise resembles most other industrial productions.* We may weave flax, wool, or cotton to any extent. With talent, capital and machinery, a man may increase his manufacture indefinitely; but it is indispensable to the successful management of a mulberry plantation that the number of trees should be limited. As a good shepherd should know individually each of his flock, so with the cultivator of the mulberry—he should study the wants and qualities of each particular tree. What is there to be expected of a plantation to be abandoned to itself, and visited but to be despoiled? So with the management of worms: in large establishments an active and minute inspection is difficult; the silk-worm, which in an isolated state is hardy and robust, loses this quality in a measure when gathered together in masses. The greater the agglomeration, the greater the danger; hence the necessity of small rooms and a very limited number of worms. Another cause that has acted more powerfully and fatally than any, was the selection of the *Mullicaulis* instead of the *Broussa* mulberry: the former is so sensitive that the sap oscillates in its stem at the slightest variation of temperature; its existence is precarious in France—what must it be in a climate so variable as that of the United States.

“Another fatal error has been the selection of the richest soil, on which to make the plantations a proof of the old adage, “that too much of a good thing is good for nothing,” is the fact that leaves from trees of exuberant foliage afford less substantial food, produce less silk, and are frequently unhealthy. Hence, we hear every day of the muscardine being produced by leaves from trees of a luxuriant vegetation.

“Mr. Mallan de Callesanue has proved that the muscardine is much more frequent with worms fed upon leaves from young wood, and that the disease diminishes as leaves are small and dry; such as produced on small and elder-wood.”

SCIENCE AND AGRICULTURE.

THE FARMERS' LIBRARY—OBSERVATIONS ON STEPHENS'S BOOK OF THE FARM.

JOHN S. SKINNER, Esq.

MONTGOMERY, Orange Co., N. Y., August 21, 1846.

Dear Sir: In the July and August numbers of your excellent periodical, THE FARMERS' LIBRARY, you have published the excellent work of Mr. Stephens, entitled "The Book of the Farm"—a work entitled to high praise for its practical good sense, taken as a whole: although I think the author somewhat in error in some of his remarks in relation to the benefits to be derived by Agriculture from science. Even in this respect I believe him to be in the main correct, the error being in stating his opinions in terms too general, which would be strictly true if more guardedly expressed. It would be truly lamentable if the business of Agriculture were not susceptible of improvement by the aid of science. The most necessary, and, I also think, the most ennobling, occupation of man would thus be sunk below almost every other of his pursuits: because human pursuits are noble or humble in proportion to the amount of intellect they require for their successful prosecution. If to be an eminent farmer only requires good manipulations of the *present* modes of Agriculture, without any hope of improvement from science to *lead* and *direct* practice, the business of Agriculture has arrived at a point to repel liberally-educated men from pursuing it as an occupation. That science has hitherto done but little, directly, for Agriculture, is freely confessed; but how long has science been directly devoted to this object? The time has been so short, and the difficulties of the subject so great, that the wonder is rather that Davy, Boussingault, Liebig, Johnstone and Dana have done so much to prepare the subject for future laborers, than that they have done so little. Every thing must have a beginning. Astronomy had its origin in astrology, and chemistry in alchemy: but now we can calculate the distance of Sirius, and detect the curious isomeric laws of organic matter—now we have got beyond a knowledge of not only the Solar and Astral Systems, and are enabled to speculate rationally about nebular systems—beyond a knowledge of primitive earths, to the metalloids which constitute their bases. Vegetable and animal physiology and chemistry are yet in their infancies, but they are quite as robust and as promising as any of their predecessors at the same age—nay, it may be said, more robust and promising, because, instead of being fed with the stimulating diet of their predecessors, a more rich, nourishing, and simple food is presented to them as the fruits and joint offerings of all of their predecessors.

But, apart from these considerations, "The Book of the Farm" is written with sound practical judgment. The error is on the right side, as practice without theory is safer than theory put in practice without experience. The matter, however, to which I especially desire to ask attention, is the combination of practice and theory he recommends for the education of youth for agricultural pursuits as an occupation. His remarks on this subject are eminently practical and useful. "Experimental farms as places for instruction in farming" he very properly condemns. But I think he should have been more particular in defining what he considered an *experimental farm*. I regard that an experimental farm upon which are collected, for practical instruction, *more pupils than can be profitably and economically employed in the several branches of Agriculture conducted on such farm*, by the easy labor of the farm hands and the pupils. If there are more pupils than can be profitably employed, the excess cannot acquire practical information; or, if they should be employed, the whole number will acquire imperfect knowledge. This observation applies with equal force to the practical farmer who takes twenty, or even five pupils, if he has not profitable and economical employment for them, as to the institution which takes one or two hundred pupils. They differ only in degree. The practical farmer having more pupils than he can profitably employ will probably turn off many slovenly, careless and imperfect farmers; but the institution with one or two hundred pupils will probably turn off many experimental farmers—a class who soon waste an estate, become disgusted with their business, and bring agricultural science to shame.

The economy of a farm has a wider signification than is usually attributed to

It signifies everything relating to the profitable management of a farm. It bestows the exact amount of labor to produce the largest results. It demands the exact amount of outlay in manure, stock, buildings, &c. to insure the largest profits. It exacts the performance of labor in the right manner, and at the right time. It requires the produce to be sold, as a general rule, the moment it is ready for market. In short, it must pervade the whole farm, in all of its operations, and cannot be taught in experimental institutions, nor upon farms which have more pupils than can be profitably employed.

We have, in this county, "The Orange County Scientific and Practical Agricultural Institute," which, I think, is admirably calculated to impart to pupils more of the right kind of agricultural knowledge, in the right way, than any institution or method I have heard of. It is superior to the plan recommended in "The Book of the Farm," in this, viz. that the farmers who are engaged in it—the price for board and tuition being very low—take no more pupils than they can profitably employ. They do not, therefore, depend on the pupils for a living, but on their farms; consequently, the pupils learn exactly what they will have to practice when they operate for themselves. At the same time, they have the advantage of being instructed in the scientific branches of an agricultural education, by a thorough-bred scientific gentleman, who is at the same time engaged in Agriculture on a farm of considerable extent, and is capable of performing any of the practical labors. Here, then, we have an institution, the first and only one of the kind, combining all the advantages recommended in "The Book of the Farm," in the highest degree. I can speak of its utility, because I have a son a pupil in it, and live in the neighborhood. I have, however, no other interest in the institution than what is common to the neighborhood, and all others interested in the general improvement and elevation of our agricultural population.—But I feel a degree of pride that a plan so practical, and promising such important results, should be conceived and executed by the ingenuity, enterprise and public spirit of my near neighbors, who projected and perfected it; and, if you think this letter worth a place in your very useful pages, it will afford me pleasure to contribute this, my mite, in communicating a knowledge of it to others who may desire to be benefited by the advantages it offers.

Very respectfully, yours,

W. F. VAN AMRINGE.

GRAPES NOT MATURING, &c.

Mr. J. S. SKINNER, New-York:

PHILADELPHIA, August 3, 1846.

Dear Sir: I should be glad to obtain information respecting grapes. I have one vine covering a large arbor, on which the fruit never matures. It hangs *very full* every season; and, about the time of attaining their full size, there appears on them a small speck, which gradually increases until they turn black or purple all over, wilt, and fall off. This vine has acted so from its first bearing up to this time, now six years. I have a number of vines on the opposite side of the house, covering a long trellis, which I perceive are going, *this season*, in the same manner; while an *intermediate* one, against the house, is not at all affected. I have tried close pruning, and very little of it, without any perceptible effect.

I observed, I think, noticed in the meetings of your Agricultural Society, reported in The Tribune, some time ago, an account of a superior *farm gate*. I have not had time to examine the LIBRARY from the beginning, which only came to hand a few days ago, owing to a mistake of your agents, but hope I shall find a drawing of it. A good gate is needed.

Yours, respectfully,

W. H. CARR.

We should be pleased to give the information, if in our power.

In the garden of Mr. Smith, at Astoria, we lately saw a vine in very full and promising bearing, for the first time since it was transplanted. It was an old vine, and had proved barren until this year. The proprietor had buried near its root a good part of an *old horse*, which he had caught floating in the river.

Philadelphia and its vicinity, with their Buists and their Landreths, are by no means deficient, comparatively, in horticultural knowledge and experience. As to the *gate*, we can only repeat—*all in due time!* In Stephens's Book of the Farm, which we are republishing, there are 12 pages given to this subject, with engravings.

IRRIGATION.

WE embrace with pleasure the first opportunity since we received, by the politeness of Mr. Sherwood, the President of the New-York State Agricultural Society, a copy of its Transactions for 1845, to lay before our readers the "PRIZE ESSAY ON IRRIGATION, BY J. J. THOMAS."

We have already taken occasion to remark, in reference to this subject, how surprisingly the facilities for irrigation are neglected in our country, in which, with plenty of water at command, and with our hot suns, wonders might be produced in the way of horticulture.—So well is this understood, as stated by a correspondent in the last volume of our Monthly Journal, that in Europe a horse is kept constantly at work, between pumping water and plowing in the garden. (See page 430.) By means of the hydraulic ram, so fully described and illustrated at page 347 of the same volume, every farmer who has a small stream of water is enabled to convey for irrigation a constant current considerably above the natural elevation of the stream, at a trifling expense. The extension of its use in Baltimore and Hartford Counties in Maryland, lately, might be referred to in proof of the utility of this contrivance. Grapes, and other luxurious fruits and vegetables, may now be cultivated with success; and kitchen gardens, heretofore liable to be parched and blighted in dry seasons, may be made to produce in abundance the finest esculent vegetables. While indolence and folly proclaim that there is nothing new under the sun, nor any avenue open to improvement, the curious and spirited inquirer sees a boundless field inviting to hopeful experiment, and pregnant with new and profitable results. To such men every path presents its objects for investigation; and in the hope of some useful discovery, and new means of benefiting society, they find their ample recreation and reward. We shall never tire of holding up to the emulation of all young men in the country, the studies and the works of the men whose amiable and useful propensities lead them to prepare for the common welfare such essays as the following:

IRRIGATION.

PRIZE ESSAY, BY J. J. THOMAS.

ITS UTILITY.—The application of water to the surface of lands, for the promotion of vegetable growth, has been practiced, in warm countries, from the earliest ages. Its indispensably essential use in ancient Egypt, and the great benefits derived from its introduction, at a later day, into Italy, sufficiently established its eminent utility. But, being less necessary in the cooler and more moist climate of Britain, it was afterward less extensively practiced in the system of Agriculture which spread to the settlements of America. The summers of the northern and middle States are equal in warmth to those of northern and central Italy; but in copying the practice of Agriculture from England and Scotland, the wide difference in the heat and dryness of summers has been too much forgotten.

The great advantages resulting from a due proportion of moisture in the soil, must be evident to every one, on a moment's reflection. Who does not know that nearly all farm crops, during vigorous growth, are benefited by frequent showers? Who has not noticed the great diminution in the amount of pasture and hay, in potatoes, ruta-bagas, and other farm products, resulting from long continued or unusual drouth? What farmer is ignorant of the fact that meadows and pastures in wet or moist situations, or which are occasionally overflowed by streams, are covered with a growth of herbage far heavier and more luxuriant than the diminished products of dry and unwatered uplands? Who, then, can question, that during the heat and drouth of our summers, not unfrequently quite severe, our root crops would be greatly assisted in their growth, and our crops of grass double in weight, by artificial watering, through channels spread over the surface of the land?

There appears to be but very few examples in this country, of well conducted and systematic irrigation. A few, however, have sufficiently shown its advantages.

E. D. Andrews, of Pittsford, N. Y. says: "In the hilly country of Vermont, I owned a farm, over which I carried the water of a small stream, in artificial channels, more than a mile. Lands that did not yield half a ton to the acre, were thus made at once to yield two tons; by which means I added to my crop six or eight tons." E. Wilbur, formerly of Yates county, N. Y., while a resident of that county, watered, artificially, a very dry and unproductive seven-acre lot, by means of side channels from a stream which passed through the center. About one day's work was needed in arranging and plowing these furrows. "The effect was such," said he, "that it paid me a hundred fold for the seven acres, after the first year. It produced for several years, while I owned it, from two and a half to three tons of hay to the acre; and the man I sold it to, told me last year that he hardly ever saw such grass—there was hardly room on the ground to make the hay after it was mowed."

In the vicinity of Philadelphia, irrigation has been occasionally practiced. Permanent meadows are selected on the two facing slopes toward a stream, from which the water is diverted by successive parallel channels, carried as high up the sides of the valley as the head of the water will admit. Two and a half tons of hay to the acre are a common crop on lands thus treated.

A brother of the writer, by spreading a small stream over the surface of his meadow, tripled at least the product from the land. A successful farmer of western New-York, by allowing the wash or liquid manure from a barn on elevated ground to spread over about five acres of meadow, cut from a part of it no less than five tons of dried hay. Dr. Kirtland, of Cleveland, says that during the past parching season, a field was made to produce two tons of hay to the acre, by turning on it the wash of the yards and road, and the water from two small springs. He also states that an intelligent farmer purchased a farm consisting mostly of barren side hills, and dry, sterile, sandy flats. He discovered, with the eye of an engineer, that a stream of some size might be turned from a deep glen, by means of a dam, and conducted upon one side of the glen, so as to be accumulated upon the back part of the farm. From this point it discharges at pleasure upon different fields, in different directions. It is an interesting spectacle, to view his different dams and canals, and to see the brook discharging from level to level, dividing and subdividing, over many acres, spreading fertility through all its varied meanderings. At this time, the farm sustains a flock of 500 or 600 of the best Merino sheep. Twenty years since, it would not have fed a twentieth part of that number.

Accidental instances often exhibit strongly the advantages of watering. In a meadow belonging to the writer, a part of the land was occasionally overflowed by a large stream; another portion, of similar soil, was left dry. The watered portion was usually double and sometimes triple in product; and so clear was the line of demarkation between these portions, that high-water mark could be distinctly traced by the difference in growth, at any time before cutting the hay. Meadows on the lower side of the Erie Canal in Niagara county, were noticed last summer, when water had escaped from the canal, to be at least double in growth in consequence; and a farmer who allows the wash from the public road, during all rains, to pass upon his adjacent meadow, cuts annually two and a half tons of hay to the acre.

RATIONALE.—A supply of water to plants is essential on two accounts. First, it is necessary that all plants in a growing state have at hand a supply of the water which enters so largely into their composition. Secondly, that there be enough to dissolve freely all substances which ascend through the stem from the roots; for, without solution, no fertilizing substances can enter the plant.

The large quantities of water needed during vegetable growth, are evident from the abundance which exists in nearly all living plants. Some plants contain more than three-quarters of their weight, and most others more than one-half. In addition to this, the enormous quantities thrown off in hot, dry weather, by perspiration, amounting sometimes to the entire weight of the plant in a day or two, or to several tons daily from an acre, render an abundant supply still more important. Hence the reason they droop and wither so soon, when the usual supply is withheld. Water also, of itself, forms an essential portion of the food of plants, by furnishing nearly all the hydrogen they consume.

But a most important office performed by water, is its solvent power. During

its fall in rain, in washing and purifying the atmosphere as it descends, it brings down matter which had previously risen in the form of vapor : and afterward as it flows along the surface or through the soil, it dissolves many solid substances, and becomes charged with various matters of organic origin, which possess more or less highly fertilizing powers, and which are thus conveyed in a fluid form to the roots of plants. Water thus becomes one of the best and most efficient modes of manuring : the quantity of foreign matter thus held in solution, and the enriching power it possesses, are often almost incredibly large, even though it may appear but little discolored by their presence. There are, of course, various degrees of foreign and fertilizing matters to be found in water, according to circumstances : from the purest brook or river water, to the heavily loaded drainings of the city sewer, or the farmer's manure tank.

In En land, and in all countries so cool and moist that plants do not suffer greatly from drouth, the chief benefit resulting from irrigation arises from the foreign matter contained in the water. Hence it becomes a very important object to obtain such streams as contain the most enriching substances. Some interesting illustrations of this fact have been given to the public. In one case, a gentleman who owned meadows on the bank of the stream which passes through Winchester, observed the great superiority of the waters of the stream below the city, after they had received the drainage of the sewers. The benefits which the plants derived from the water was strikingly shown by its deteriorated quality after it had passed over the fields and imparted its fertility to the plants. On one occasion, after having long enjoyed the exclusive use of a stream, his neighbor, higher up, imitated his example ; and the water, in consequence, was so reduced in value, that he thought of disputing the right with him.

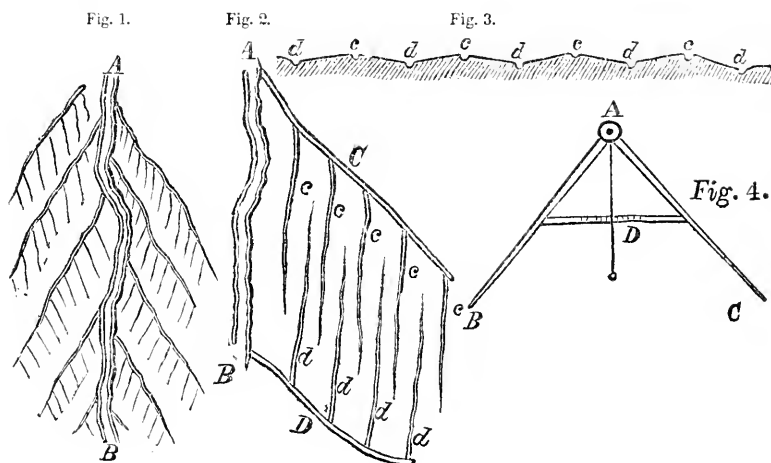
An interesting experiment was made in Scotland, to show this abstraction of dissolved substances by the plants. A stream of water before its use in irrigation, was analyzed, and was found to contain per gallon about 10 grains of common salt, and 4 grains of the salts of lime. After passing over fifty yards of meadow, it was again analyzed, and yielded only 5 grains of common salt to the gallon, and 2 grains of the salts of lime.

A long continued flow of the water will thus impart to the plants a large and most important quantity of mineral as well as organic manures. It is not necessary that streams should always appear to the eye turbid or impure, in order to be well adapted to this kind of manuring : indeed a turbid stream, rendered so by the suspension of clay merely, may be less valuable than a limpid stream, which holds gypsum and various other salts in solution. Several analyses have shown that all *hard* waters contain considerable portions of gypsum or sulphate of lime ; and that not unfrequently every two thousand parts of the water of our rivers and brooks contain one part of gypsum. If, therefore, every square yard of common meadow soil absorbs only eight gallons of water, more than a hundred weight and a half of gypsum per acre is thus diffused through the soil.

It would be hardly possible to convince the community of the enormous amount of wealth lost to the country yearly by a neglect to secure the liquid manure with which it abounds. The quantities which are every year swept from our fields and farm-yards, and carried through our lands, unapplied, in running streams, into our rivers and lakes, and into the sea, might safely be estimated at millions. The sewers of towns and villages alone carry off a vast amount of manure. A meadow near Edinburgh, belonging to the Earl of Moray, which was watered for several years by drainage from the city, yielded so heavy a crop of grass that it was cut six times a year, and the whole yearly crop was sold at \$120 to \$150 dollars per acre.

But even throwing the manuring process, strictly speaking, out of the question, who can estimate the beneficial results of judicious irrigation, if generally applied through the country, wherever running water is accessible ? During hot and dry summers, our parched and withered grass fields, and our diminished and stunted ruta-baga and potato crops might in many situations be at once stimulated into freshness and vigor, and doubtless be double in product. The artificial improvement of supplying manure to the soil is universally practiced and commended, and considered the first and last requisite in successful culture ; while the artificial application of water, which, unlike manure, costs nothing, nor requires the labor or expense of cartage, but is often equally if not more important, seems to be nearly unknown. Why should the Yankees be behind

other portions of the world in this particular? We do not lack proofs, sufficient to every observing mind, even in the rough and wild manner in which it is performed by the inundation of the flats of creeks and rivers, nor has such proof been wanting, from the overflowing of the Nile in ancient days down to the present age of the world; but the artificial process possesses this eminent advantage, that while the former is uncontrollable and uncontrolled, the latter may be applied or withheld at pleasure, as the crop suffers from drouth, or becomes injured by too heavy a flooding.



MODES OF PRACTICE.—The simplest mode is represented in Fig. 1, where A B is the stream to be used, running in the bottom of a valley. From this stream the water is conducted in channels on each side as high up the sides of the valley as a moderate current in those channels will admit, and from these the water is made to escape through holes in small pieces of boards, placed at regular intervals, so as to spread the water over the surface below. If the sides of the valley are steep, the angles which these channels will form with the main stream will be acute, that is, it will be necessary to conduct them to a considerable distance down the valley, in order to recede much from the main stream. Where, however, the land is more nearly level, they will diverge from the stream more nearly at right angles.

Where, however, the land lies very nearly on a level it becomes necessary to guard against the stagnation of the water upon the surface. This object is accomplished by means of the mode represented in fig. 2, where the channel C carries the water from the main stream, and from which again the smaller channels *c c c c*, conduct the water more evenly over the surface. To prevent the water standing on the ground, small drains *d d d d*, are made between the channels and alternating with them, which convey the water to the main drain D, through which it again empties into the stream.

When land subjected to irrigation is nearly level, it should be plowed into "lands" in such a manner that the channels for distributing the water, as in fig. 2, may be upon the ridges, and the drains in the dead furrows. This is shown by the section represented by fig. 3, *c c c c*, being the distributing channels, and *d d d d*, the drains.

LAYING OUT THE CHANNELS.—This can never be done with sufficient accuracy without a leveling instrument. The cheapest for this purpose is represented by fig. 4. It consists of the two legs AB and AC, which should be light, but not less than ten feet long, connected and stiffened by the cross bar, the two ends of which must be exactly equidistant from the point A. A plumb line is suspended from the summit A, and if the legs stand on level ground, the line will cut the cross bar exactly in the middle; but if the point of one leg be lower than the other, the line will fall out of the center and toward

that lower leg. The difference in the level of the two legs will be accurately indicated by the graduated scale on the cross bar. If, for instance, the distance AD be one-third the length of one of the legs, (the angle formed by the two legs being a right angle,) then a movement of the plumb line half an inch from the center, would indicate a difference in the level of the two points of the legs of about two inches. The following is a general rule for this purpose applicable to all cases with sufficient accuracy, where the ground does vary greatly from a level. Multiply the distance AD by the number of times the leg exceeds it in length, then, as fourteen is to twenty, so is the product to the difference in the level of the two points of the legs.

If the two points are therefore one rod apart, a channel may be expeditiously and accurately laid out, so as to have a slope of two inches in a rod, by placing the level in such a position that the plumb will fall half an inch from the center if the distance AD is one-third of AB, or seven-tenths of an inch from the center, if AD is half of AB, according to the above rule. Successive points are thus found by alternately bringing forward the legs of the instrument, each being two inches lower than the preceding. Small sticks are driven into the ground at these points, and by them a uniformly descending furrow is easily and accurately plowed for a distributing channel. If half that slope only is needed, one-half the distance from the center of the graduated bar is to be taken.

The preceding course of marking the channel is more particularly adapted to uneven ground, where every rod of distance must be accurately known. But, on large tracts of nearly level land, it will be easier to attach two sights at the ends of the cross bar, and take longer observations—a rod, marked at a height equal to the height of these sights, being held at a distance by an assistant.

Such a level may be made to close, like a pair of compasses, when not in actual use. If the points are accurately one rod apart, the operation of measuring the distance is combined with that of leveling.

PRECAUTIONS NEEDED.—Irrigation, like every other farm operation of importance, needs to be conducted with care and skill. A want of judgment or proper intelligence may in some cases lead to failure, or greatly lessen advantages.

Practice has fully shown that too long a continued and heavy flooding of up land plants is actually prejudicial to their growth. The plants should enjoy the full benefits of both air and water. There is no better way of accomplishing this object than to keep the water constantly passing over the surface in a tolerably brisk current. It must not be so rapid as to wash away the soil, nor so slow as to stagnate, or to drown the plants. It is only while water is in motion that plants are enabled to draw from it to advantage, by successive fresh supplies, the nutritive substances it contains in solution. A farmer accustomed to the appearance of plants when in the most rapid and healthful state of vegetation, will detect at a glance any injury which an overdose of water may occasion, when the supply should be withdrawn. Excessive irrigation may also prove injurious where it produces a water-soaked subsoil, the remedy for which should be draining. Indeed, so different in nature is a water-soaked and an irrigated soil, that, while the former injures, the latter benefits; the former state resulting from a want of draining, and the latter always proving most eminently beneficial on well drained land, where stagnant water can never accumulate.

Equal success has not always attended irrigation, in consequence of the different quantities of enriching matter contained in different streams. The most valuable, usually, are those which have passed through a thickly populated country, and have received and become saturated with different kinds of waste manures. Hence the drainage of sewers, and the washings of roads, are particularly valuable. Sometimes, however, there are fertilizing substances derived from the soil or the minerals it contains, which may not in the least disorder the water, and yet be of very important benefit. These can only be known by their effects in practice, or by analysis. But these considerations more particularly demand attention in cool and moist climates, as in Britain, where the simple application of water is unimportant. Hence, there autumn and winter irrigation is much practiced—the water being then charged with animal and vegetable matters which have accumulated during the summer. In the United States, where a supply of

water during drouth and heat is so much more essential, this difference in the richness of water is not so visibly observed.

In using small streams, on considerable acclivities, by *catch-work* as represented in fig. 1, temporary means of diverting the water from the main channel may be resorted to, and there can possibly be a failure. But, in larger streams, the work should always be well formed at once. A good permanent dam must be made, and substantial *hatches*, or solid framework furnished with a sliding grate, inserted. In using small streams, many diverging channels may be cut: in large ones this cannot be done, from the cost of many large dams; a single dam may, therefore, be used, from which a main side channel should pass, to be subdivided according to the circumstances of the case.

Irrigation will always need an exercise of the judgment, to be done in the best manner; no two pieces of land being exactly alike, and the irregularities of the surface varying in many ways, the plan of the work or the distribution of the channels must vary. Each, therefore, requires a different design, adapted to the circumstances of the case. But no one should be deterred from an attempt, nor lose the eminent advantages of irrigating his grounds, because he cannot attain perfection at once.

It is sometimes objected to watering grass and other lands, that the crop, though greatly increased in quantity, is lessened in quality. This is indeed true to a small degree, but not more so than results from an increased growth by stable manure. The slight inferiority in quality is immeasurably overbalanced by the increase in bulk. No objector would desire his hay crop to be lessened one-half in quantity by a parching drouth, in order that the hay might be better.

APPLICATION TO DIFFERENT CROPS.—Irrigation is usually applied to grass land, but there appears to be no reason why it may not be greatly advantageous if used for different cultivated crops during our hot summers. S. Williams, of Waterloo, N. Y. states that, during a severe drouth, he admitted water in small gutters between the hills and rows of vegetables in his garden. "In ten days, early potatoes grew two-thirds in size." In fact, he never obtained good potatoes before. Other vegetables were greatly benefited. The great increase by watering, in the growth of spinach, lettuce and strawberries, by the English and Flemish gardeners, is well known. In a warmer climate, the advantages would be increased. "The melon," says Lindley, "acquires its highest excellence in countries where its roots are always immersed in water, as in the floating islands of Cashmere, the irrigated fields of Persia, and the springy river beds of India." But the same experiments were not attended with such success in London, where the leaves perspire less, and the climate is cooler. During the past summer, raspberry plants, watered by the drippings from the eaves of a workhouse, grew triple the size of others deprived of this advantage.

But as all plants are rendered more succulent by watering, the supply of water should be withheld to all that bear fruit, as the period of maturity approaches, or diminished flavor will be the consequence.

CALCULATING THE VELOCITY OF WATER IN CHANNELS.—It often becomes a matter of some consequence, not only in cutting channels for irrigation, but for surface drains in reclaiming wet lands, to know the exact amount of water which may be carried with a given descent in the stream. To enable any person to calculate this readily, the following rule is given, and may be readily used by any boy who understands common arithmetic.

To ascertain the mean velocity of water in a canal or river flowing through a straight channel of equal size throughout:

Let f = the fall in one English mile in inches;

Let d = the hydraulic mean depth;

Let v = the velocity in inches per second, then

$$v = 1.23\sqrt{df}.$$

The hydraulic mean depth is a quantity which, when multiplied by the perimeter of the channel in contact with the water, gives an area equal to the area of the section.

Example: Suppose a furrow is cut six inches wide and four inches deep, with perpendicular sides, and that it descends one inch in a rod: to find the quantity

of water that will flow in it. It will fall 320 inches in a mile: the perimeter in contact with the water will be, six inches on the bottom and four inches at each side = 14 inches: the area of the section will be 6 times 4 = 24, which, divided by 14, the perimeter, gives 1.7 = the hydraulic mean depth. Then by applying the above rule,

$v = 1.23\sqrt{320 \times 1.7} = 1.23 \times 7.4 = 9.1$ inches, the velocity per second, or about one gallon per second, or one hoghead per minute.

In practice, considerable allowance must be made for rough and uneven sides and bottom, which would tend to retard the current. In larger channels, the calculation would be more accurate.

BARLEY.

WE much regret, and for one particular reason, that we have not had time to compile a paper on this subject for this number, as we have reason to think that some judicious wheat-growers may be disposed to try it, in lieu of that grain, which the attacks of pestiferous insects and the casualties of seasons have conspired to render a very uncertain crop, and which the cheap lands and cheap labor of the Western States, with the facilities provided by the Atlantic States for its transportation to our sea-ports, still farther coöperate to render an unprofitable crop, even when not overtaken by either of the disasters referred to. How can the grain-grower, especially the slaveholding grain-grower, whose force, to be constantly supported, is applicable to the production and preparation of this crop, for so short a period of its growth and preparation for market, compete, when it gets there, with the new settlers of the prairies, who, according to the judgment of an Editor of a leading Journal of Commerce, who lately traversed that region, can make wheat at 16 cents a bushel? The question is indeed a serious one with farmers of the old States, to what product of the earth shall they turn for a living profit? Where are the non-producing consumers to be found to demand to eat or to wear it when made? Hence, the truth can never be too deeply impressed on the actual cultivators of the soil, that the happiest condition for them is that in which there is the greatest number of people, and these in the most prosperous circumstances, with bellies and backs waiting to demand his meal, his flour, his meat, and his wool. Better, if he *must be taxed*, that he should be taxed for this, than for the support of armies and army contractors. But, to come back to Barley: we have reason to expect a paper on the subject, in time for our next number, from the pen of a gentleman in the western part of New-York, who is thoroughly conversant with its culture in that State, and to whom we have addressed a letter covering the whole ground of inquiry. This has been done more particularly for the benefit of Wheat growers in Maryland.

From the Library of Agri. and Hort. Knowledge.

BARLEY.

ON THE CULTIVATION OF BARLEY; Communicated by Mr. HITCHINS, Land-Surveyor, Brighton.

BARLEY. *Hordeum*. Tryándria Digý'nia, Linn.—Nat. ord. Gramínea.

Barley is considered to rank next in importance to wheat: there are six species and sub-species in cultivation, besides varieties.

1. *Hordeum vulgare*, spring or early barley.
2. " *caléste*, a variety of the above.
3. " *hexástichon*, winter, square, or bear barley.
4. " *distichon*, common or long-eared barley.
5. " *distichon nudum*, naked barley.
6. " *Zeoeriton*, sprat or battledore.

There is no grain, perhaps, more affected by soil and cultivation than barley, the same species exhibiting opposite qualities, modified

by the nature of the soil from which it is produced: these opposite productions of the same individual will, if sown at the same period, on the same land, and under the same course of cultivation, exhibit corresponding differences, which are manifested during the growth of the crop, and subsequently in the quality of the sample when in hand. Thus the finest samples, the growth of suitable and well-cultivated lands, would, if sown on a poor and sterile soil, become alike coarse in appearance and indifferent in quality. This fact, however important, has hitherto but little engaged the attention of the farmers in the southern part of England; and the spring or early barley, without reference to quality, is therefore indiscriminately sown, as being found more productive for the purpose of malting than any of the beforementioned varieties. The sprat or battledore barley makes good malt, and being short and erect in the ear, and tapering in the stem, is, on strong lands, less liable to injury from falling, and is, consequently, preferred by a few individuals. The common or long-eared barley, being long in the ear and weak in the straw, is very liable to lodge early, whereby the grain is rendered inferior in quality, and is, therefore, not extensively cultivated. Naked barley, or wheat barley, is so termed in consequence of the grain separating readily from the chaff when threshed. It is a native of the North, and will bear sowing early in the season; it is not, however, in much estimation in the south of England, and is seldom cultivated, although it makes strong malt, and is excellent for fattening of hogs and cattle. Winter barley, or square-eared barley, is grown to a considerable extent in the north-western part of England and in Scotland. It is usually sown for the feeding of sheep in the south of England, and mixed with tares for the soiling of cattle. As food for sheep it is far more productive than rye, as it admits of being fed down every two or three days during summer; and if intended for seed, it may previously be fed off by sheep early in the season without injury to the crop.

CULTURE, &c. Soil.—The land that produces the best barley is generally of a silicious, light, pulverulent and dry nature; for a good mellow preparation and free soil are essential to the growth of malting barleys. Cold, wet soils, which are peculiarly retentive of water, are ill adapted to the growth of this grain, both in reference to its weight and malting qualities. The whole matter of barley and its straw contains more silicious particles than that of any other grain cultivated by the British farmer, and hence the reason why a sandy soil is most congenial to the growth of this plant.

PROPAGATED.—By seed sown either broadcast or in drills, the quantity varying according to the quality of the soil, cultivation and time of sowing; less being required on rich mellow lands than on poor soils; early sowing with good tillage requiring less seed than late sowing with indifferent tillage.

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The quantity of seed per acre, if sown broadcast, varies from four to six bushels; if drilled, a less quantity will be required; and on very rich soils less than four bushels will be sufficient.

Time of Sowing.—The common sprat barleys may be sown from the second week in March, if the weather prove dry, until the tenth of May. The Big, a variety of the winter barley, will stand against the winter, and may be sown either in the autumn or the beginning of March. The Bear or square barley should be sown as early in the autumn as the clearing of the harvest will admit, and may be sown after wheat, barley, oats, or any pulse crop, being a plant of sturdy growth.

In the Choice of Seed, great care should be taken that it is not of a reddish hue, as in that case it is more than probable that a great part of it will never vegetate; the sample should be of a pale lively color, and uniform throughout. Some farmers, not aware of its importance, are in the habit of sowing *thin corn*, but unless the land is quite adapted from its nature and cultivation for the fullest encouragement of the plant, it will in the end be found a 'penny wise and pound foolish' speculation. In all cases it will be well for the farmer to select the finest samples and the plumpest grown, for, in unfavorable seasons, the crop from thin grain is always delicate, and assumes an unkindly hue—while, on the contrary, plump seed throws up strong, healthy stems, capable of resisting the effects of inclement seasons, and in more congenial weather pushing forth with renewed vigor and redoubled strength.

Preparation of the Soil.—Barley, for the most part, succeeds best after turnips, tares, potatoes, carrots, mangel-wurzel, or other green anchoring crops, but does not succeed so well after wheat or other white straw crops, nor after rape so well as other green crops, except on the south downs and certain lands adjoining the sea coast—where both the quantity of grain is greater, and the quality better after wheat (particularly wheat sown upon a clover ley), and also after rape, than from any other course of tillage. The land requires more or less plowing, according to the quality of the soil, and the state in which it is found, after the season for the working of it commences. On retentive soils, as compact gravelly clay, if the turnips have been fed off during wet weather, the earth breaks up in large clods, and requires to be reduced by the roller, and at least a second plowing should be given before the barley can be safely sown. On light soils of the best quality, one plowing may be sufficient; but if the land is twice plowed in the spring as soon as it is sufficiently dry for that purpose, it will be found amply to repay both the labor and expense. Early weeding should be attended to, or the crop will be injured by treading, and the roller should be used before the blade becomes spindled.

Harvesting.—In the harvesting of barley more care is requisite than in taking any of

the other white crops, even in the best of seasons; and in bad years it is often found very difficult to save it. It should not be cut until quite ripe, the ears seldom falling off excepting from high winds. It should be suffered to lay in the field until the straw is quite dry, being turned over early in the morning while the dew is still upon it: this practice is found to improve the color of the skin, and thereby renders the grain of more value to the maltster. It should never be carried unless perfectly dry, otherwise it is in danger of being heated in the mow, which reduces the value of the grain very materially, for the undue action of the heat destroys the spear or germination of the grain, the malting process is consequently very unequally performed, and, as the *duty* has to be paid upon the whole bin, maltsters will scarcely purchase such samples unless for the purpose of grinding, and then always at an inferior price. It will be prudent, therefore to carry *oats* in the early part of the morning, until the heat of the sun has evaporated the dew from the *barley*, when it should be carried in a perfectly dry state the remainder of the day, until the dew is again deposited in the evening.

It is a very common practice to sow clover and other grass seeds with this crop, but great care must be taken that they are thoroughly harvested, for, otherwise, considerable fermentation will be created, and the sample injured. It not unfrequently occurs, that, when it is supposed to be well harvested, heat is soon found to subsist in the mows, which should be daily examined, by placing a long iron spit, that should be kept for the purpose, deep into the mow, when, if the heat is found to increase, no delay should take place, but the middle should be instantly cut asunder and taken out, in proportion to the size of the mow, when it will generally escape without farther injury. This operation, however, must not be deferred, as the injury sustained rapidly increases. When barley is grown in large quantities, it is usual to tread the mows with horses or oxen, to get as much as possible into the barns, in which case more guarded caution is necessary than when thrown loosely over the floor.

Threshing.—This grain should never be threshed by a machine, as the injury done thereby is frequently of a very serious im-

port to the grain; it bruises the *malting spear*, which is as injurious to the maltster as if heated in the mow, and should therefore be guarded against. Care must also be taken not to have too large heaps lying together without frequent examination, as, until it has undergone a proper fermentation in the mow, it will be very apt to heat in the heap, in order to prevent which, it requires to be moved daily, or each other day, till cleaned up from the chaff, which, from the fineness of its texture, scarcely admits the introduction of air, and consequently promotes fermentation.

Use.—1. This grain is not only the most useful for making into malt, but is the best of food for promoting the fattening of hogs, after they have been fed to a certain extent with beans, peas, or other food, from which it has been found that the meat is not only more tender, but increases in boiling, while the meat of those fed on beans and peas alone has not only been hard, but has not yielded any increase. Barley is also good food for horses after being soaked in water, and allowed to vegetate, if given in the spring of the year in small proportions with oats; and when given with other grain in its ground state, is an excellent food for fattening bullocks.

2. *The straw* is used for feeding cattle and for litter.

3. Malt is the great purpose to which barley is applied in this country. To understand the process of malting, it may be necessary to observe, that the cotyledons of a seed, before a young plant is produced, are changed by the heat and moisture of the earth into sugar and mucilage. Malting grain is only an artificial mode of effecting this object. The grain is steeped in cold water during a certain period; the water is then allowed to drain off; the grain is spread out into a deep heap; it gradually heats; the rootlets begin to shoot out; afterward the plumula begins to grow; and when this has grown to a certain extent within the grain, the farther germination is checked by exposing the grain on a kiln, heated by fire to such a degree as extinguishes the vitality of the seed. At this period it is found that the starch is, in a great measure, converted into saccharine matter, and by subsequent fermentation or distillation, either beer or spirits is obtained.

THE BORER IN APPLE-TREES.—W. Buckminster, at an agricultural meeting at the State House, Boston, stated that the borer, which is a fly in its perfect state, lays ten eggs on the tree near the ground; that they hatch young worms and enter the bark the first year; the next, they eat into the wood and ascend; and the third, come out and change to the perfect insect. He says the best remedy is to wash the trees with strong lye in July, after the eggs are laid, and before the worms have buried themselves in the bark.

PROTECTING TREES FROM MICE.—A correspondent of the *Gardener's Chronicle* mixes soot and milk till of the consistence of thick paint, and then applies it to the trees with a brush. This, applied once a year, he finds effectual protection against hares and rabbits. Would it not be equally so against mice?

PROFESSOR OF AGRICULTURE FOR YALE COLLEGE.

AMONG the most auspicious signs for the cause of Agriculture is the appointment, recently, of J. P. NORTON, Esq. to an Agricultural Professorship in Yale College, Connecticut.

Mr. Norton had the fine spirit and good sense to go, some years since, to Edinburgh, the head-quarters of chemical science as applied to Agriculture, and has there had the advantage of pursuing the study under the ablest teachers, as well in the field as in the laboratory; and we shall be mistaken in the tokens of an improving public taste, if *his* class at College be not as numerous as he can do justice to. But we should suppose he would be demanded, if to be had, for the Smithsonian Institute, at Washington.

There must be a beginning to everything; and we apprehend the beginning is now, when Agriculture will no longer lag in the rear of other pursuits, either in public opinion or in the fostering care of the Governments, of the States, if not of the Union. Is there any good reason why the people should be taxed for educating two or three hundred every year, and to whom life commissions and good pay are to be given, to strengthen our arms for war, and yet not give one dollar to *teach* (without afterward giving them commissions and pay for life) and qualify men to go teaching surveying, and mapping, and the art of road-making and bridge-building, and chemistry, and mineralogy, and botany, and natural history, and all applications of the arts to industrial pursuits, which would promote a better knowledge of Agriculture, manufactures and commerce?

If the people had sense and self-respect enough to compel their Representatives to expend one-fourth as much for the dissemination of *useful knowledge* and the *perfection of the industrial arts* as they now expend every year on war and warlike objects, the time would soon arrive when all wanton promoters of war would be dreaded and doomed as so many mad dogs.

UNCERTAINTY OF THE WHEAT CROP.

"BERRIES OF WHEAT."—We hope neither this expression, nor any cockneyism, may grow into use among our agricultural writers. Blackberries and whortleberries, and even berries of grapes—but not berries of wheat. Is it not enough to say, the grain of the wheat is smooth, or round, or red, or white?

Extract of a Letter, dated

"TALEOT COUNTY, Md. 17th Sept. 1846.

"I don't know what to do myself: I have never known so much uncertainty manifested by farmers in my life—by men, too, having much practical experience. Since I wrote you I have ascertained the product of my *Kloss Blue Stem Wheat*. I procured 10 bushels of seed; it was seeded on fair, good land, and yielded just 33 bushels, three times through the fan. Another farmer seeded 5 bushels on well-prepared fallow, about the middle of September, and got but 10½: it was destroyed by fly. Gen. T., on the other hand, made a fine crop of this wheat, the seed obtained from the same source. Of the several varieties alluded to as having been seeded by a young farmer near me, the *Kloss* was the best, and the famed *China*, or *Hardware*, good for nothing. Again, another farmer, who had Mediterranean, *Kloss* and *Hershey* all growing in the same field, informed me recently that the latter had proved the most productive. And yet another, who had the *Polish*, which is a beautiful white wheat, and *Hershey* growing in the same field, the latter was so white and fine that he mixed it with the other, and expected to get the maximum price for the best family flour; and I have no doubt that he will, from the representation of several to me who have seen it. Thus you see the great uncertainty of the wheat crop with us, and the necessity of throwing out all the light which can be shed upon the subject."

COLOR OF FOWLS.

"BEAUFORT, S. C. 24th June, 1844.

"A NEIGHBOR informs me that he had nine young Guinea fowls of that color (ash) and three of the dark gray, hatched by the same hen and treated alike, the result of which was, that he raised the three common ones, but not one of the ash-colored. The white could not well raise less, but must, if possible, be still more delicate. I had a pair of white for two or three years, but never saw a young one from them. I had also, for two years, a pair of white ducks, with large white top-knots, or crests, like Poland fowls, but never raised one with the top-knot. They also, are found to be very hard to raise.

"By-the-by, I quite agree in opinion with Gen. HARMON about the kinds of sheep for persons situated far from a market, and have acted up to my belief; for I have refused Bakewell's, offered in exchange, and even for nothing, preferring to keep to the Merino, which unquestionably gives the sweetest lamb and mutton, more especially when fed, as mine are, upon salt marsh pastures. The Parisian taste quite agrees with mine on the subject of sheep pasture, as I well remember that in the *Magazin de Comestibles* there, the "*Gigots de Pré Salé*," are much more remarkable for the size of their price, than for their own size."

We have heard it remarked by a gentleman of science and very various knowledge, the Editor of the Southern Cultivator, published at Augusta, that a fowl so remarkable as a white Guinea fowl is originally produced, like the "white black-bird," (which is seen occasionally,) by some disorder in the secretions or coloring matter, indicating unhealthiness in the individual. The inference is, that such peculiarities cannot be so continued as to establish a new variety. Sometimes we meet with persons who are born with a *tuft of white* in the midst of a suit of dark hair: the celebrated ALEX. HAMILTON was so marked at his birth and the mark was inherited by his son of the same name. Doubtless white fowls of almost every kind are more tender than others; so it certainly is with the white turkey and the white Guinea fowl; still, that these are established varieties of their families respectively, is proved by the fact that we continue to have them. The egg of the Guinea fowl is far richer and yet more delicate than the hen's egg, and the turkey egg stands next on the list for flavor and excellence, to be eaten from the shell; yet we were surprised to hear Judge Mitchell say that in New-York his market man had to give "two for one," to make sale of his Guinea fowls' eggs. As for the *white top-knot duck*, we suppose it to be an original natural variety, as we have often seen them, and lately more especially, quite a large, healthy looking young brood at Plandome, on Long Island, and though not yet *feathered*, their top-knots were well developed. So, too, at Roswell House, New-Jersey, there are the white turkeys, the white Guinea fowls, the white puddle duck, with and without top-knots, and white Muscovy ducks.

No better sign, in our judgment, than to see a farmer take pleasure in all these apparently small affairs. It shows that he has a mind attuned to nature—one that qualifies him to enjoy what may be called the music and the poetry of his profession, and in lack of which he will be apt to seek relief from its inevitable cares and labors in things less useful, as well as less innocent.

Apropos of the coloring of birds, we find the following in a newspaper:

A REMARKABLE DISCOVERY.—Professor Auckland, at a meeting of the Royal Society in London, (the Duke of Cambridge in the chair) read a paper upon a discovery he has recently made, which promises not to be of any great utility, but, at the same time, will be

very ornamental, and a source of great pleasure to many persons. His experiments were made upon what Linnaeus terms the *Oiseau Noir*, our common blackbird. He took several of these birds (which were hatched early in the spring) immediately from the shell—kept them in a well warmed apartment, and fed them three times a day, upon different kinds of flower seed, from which the husks had been carefully picked. The result was, each bird had the plumage of the flower that would have grown from the seed, if planted in the ground. This is a beautiful research, and richly has the learned Professor been paid. He exhibited to the Royal Society several specimens. His Highness, the Duke of Cambridge, immediately gave orders to the keeper of his aviary, to make experiments on an extensive scale. Professor Auckland's birds were sent by special express to the Queen.

TABLE TO MEASURE PLOW-WORK.

THE following table may prove serviceable, as it will enable the farmer to reckon, with exactness, how much work is done—that is, how many miles are traveled over in a day when the work done, as it proceeds, is of a *given width*. If, for instance, the plowman turns a furrow of seven inches wide, and he can do at that rate an acre a day, traveling fourteen and one-eighth miles, then it follows that with a cultivator or harrow, which operates as it goes, over a breadth of twenty-one inches, he ought to get over three acres a day, to say nothing of the time saved in *turning* once instead of three times; and this shows the economy of the cultivator over the plow, for it not only enables one man to get over as much ground in a day as three would do with a plow, but it requires only one-third of the horse power and horse feeding.

Here, in truth, in the substitution of the cultivator for the plow, lies the secret of the so much greater quantity of corn and tobacco being made to the hand than was formerly done within the recollection of many of our readers. If contrivances for saving our crops had kept pace with ingenious devices to save labor in making them, much more would have been achieved for Agriculture. In no country does land so much demand capital, or Agriculture so vehemently cry aloud for labor-saving implements, as in America.

We are confident that while much has been done, as we can affirm, within our own recollection, much more remains to be accomplished. Steam, for instance, has scarcely been made to contribute all it should do to the purposes of the husbandman—nothing in comparison with what it has done for commerce, for manufactures, aye, and even for that scourge of the world, *war*! But, when the proper books and proper sort of study come to be in use, and prevail in all our country schools, the landed interest, and those who are to represent it, will become imbued with a just sense of its importance and its rights; and these will be reflected and guarded by public *legislation*, and the public sentiment, until those who appropriate the common treasure of the people, of which so much is drawn from the agricultural community, will not *dare* give a dollar for any project or establishment, without appropriating *at least an equal amount* for agricultural knowledge and discoveries. But what can one journal effect toward awakening public sentiment, when even kindred journals deem it not expedient or safe to say a word for the political rights of Agriculture? Still we will not altogether repress the hope that the faintest whisper, in so good a cause, may swell into the trumpet's blast, and the *people of the land* become awakened to a sense of their rights and a *consciousness of their power*.

TABLE....BY JOHN MORTON.

Showing the distance traveled by a horse, in plowing or scarifying an acre of land; also, the quantity of land worked in a day, at the rate of sixteen and eighteen miles per day of nine hours.

| Breadth of furrow-slice, or scarifier. | Space traveled in plowing an acre. | Extent plowed per day, at the rate of | | Breadth of furrow-slice, or scarifier. | Space traveled in plowing an acre. | Extent plowed per day at the rate of | |
|--|------------------------------------|---------------------------------------|-----------------|--|------------------------------------|--------------------------------------|------------------|
| | | 18 Miles. | 16 Miles. | | | 18 Miles. | 16 Miles. |
| Inches. | Miles. | Acres. | | Inches. | Miles. | Acres. | |
| 7 | $14\frac{1}{8}$ | $1\frac{1}{4}$ | $1\frac{1}{8}$ | 46 | $2\frac{1}{6}$ | $8\frac{1}{3}$ | $7\frac{2}{3}$ |
| 8 | $12\frac{1}{4}$ | $1\frac{1}{2}$ | $1\frac{1}{4}$ | 47 | $2\frac{1}{10}$ | 8 | $7\frac{3}{5}$ |
| 9 | 11 | $1\frac{3}{5}$ | $1\frac{1}{3}$ | 48 | $2\frac{1}{12}$ | $8\frac{3}{4}$ | $7\frac{3}{4}$ |
| 10 | $9\frac{9}{10}$ | $1\frac{4}{5}$ | $1\frac{2}{5}$ | 49 | 2 | $8\frac{9}{10}$ | $7\frac{9}{10}$ |
| 11 | 9 | 2 | $1\frac{1}{4}$ | 50 | 2 | $9\frac{1}{10}$ | $8\frac{1}{10}$ |
| 12 | $8\frac{1}{4}$ | $2\frac{1}{5}$ | $1\frac{9}{10}$ | 51 | $1\frac{9}{10}$ | $9\frac{1}{5}$ | $8\frac{1}{4}$ |
| 13 | $7\frac{1}{2}$ | $2\frac{1}{3}$ | $2\frac{1}{10}$ | 52 | $1\frac{9}{10}$ | $9\frac{1}{5}$ | $8\frac{2}{5}$ |
| 14 | 7 | $2\frac{2}{3}$ | $2\frac{1}{10}$ | 53 | $1\frac{9}{10}$ | $9\frac{1}{5}$ | $8\frac{2}{5}$ |
| 15 | $6\frac{1}{2}$ | $2\frac{3}{4}$ | $2\frac{2}{5}$ | 54 | $1\frac{4}{5}$ | $9\frac{4}{5}$ | $8\frac{9}{10}$ |
| 16 | $6\frac{1}{6}$ | $2\frac{4}{10}$ | $2\frac{3}{5}$ | 55 | $1\frac{4}{5}$ | 10 | 8 |
| 17 | $5\frac{3}{4}$ | $3\frac{1}{10}$ | $2\frac{3}{4}$ | 56 | $1\frac{3}{4}$ | $10\frac{1}{4}$ | 9 |
| 18 | $5\frac{1}{2}$ | $3\frac{1}{4}$ | $2\frac{9}{10}$ | 57 | $1\frac{3}{4}$ | $10\frac{2}{5}$ | $9\frac{1}{5}$ |
| 19 | $5\frac{1}{4}$ | $3\frac{1}{2}$ | $3\frac{1}{10}$ | 58 | $1\frac{7}{10}$ | $10\frac{3}{5}$ | $9\frac{1}{3}$ |
| 20 | $4\frac{5}{10}$ | $3\frac{3}{5}$ | $3\frac{1}{4}$ | 59 | $1\frac{7}{10}$ | $10\frac{4}{5}$ | $9\frac{2}{5}$ |
| 21 | $4\frac{7}{10}$ | $3\frac{4}{5}$ | $3\frac{1}{3}$ | 60 | $1\frac{7}{10}$ | $10\frac{9}{10}$ | $9\frac{7}{10}$ |
| 22 | $4\frac{1}{2}$ | 4 | $3\frac{2}{5}$ | 61 | $1\frac{3}{5}$ | $11\frac{1}{5}$ | $9\frac{1}{5}$ |
| 23 | $4\frac{1}{4}$ | $4\frac{1}{5}$ | $3\frac{7}{10}$ | 62 | $1\frac{3}{5}$ | $11\frac{1}{3}$ | 10 |
| 24 | 4 | $4\frac{1}{3}$ | $3\frac{9}{10}$ | 63 | $1\frac{3}{5}$ | $11\frac{1}{2}$ | $10\frac{1}{5}$ |
| 25 | 4 | $4\frac{1}{5}$ | 4 | 64 | $1\frac{5}{10}$ | $11\frac{7}{10}$ | $10\frac{3}{5}$ |
| 26 | $3\frac{4}{5}$ | $4\frac{2}{5}$ | $4\frac{1}{5}$ | 65 | $1\frac{5}{10}$ | $11\frac{5}{10}$ | $10\frac{3}{5}$ |
| 27 | $3\frac{3}{5}$ | $4\frac{3}{10}$ | $4\frac{1}{3}$ | 66 | $1\frac{1}{2}$ | 12 | $10\frac{3}{5}$ |
| 28 | $3\frac{1}{2}$ | $5\frac{1}{8}$ | $4\frac{1}{5}$ | 67 | $1\frac{1}{2}$ | $12\frac{1}{4}$ | $10\frac{3}{5}$ |
| 29 | $3\frac{1}{2}$ | $5\frac{1}{4}$ | $4\frac{3}{5}$ | 68 | $1\frac{1}{2}$ | $12\frac{2}{4}$ | 11 |
| 30 | $3\frac{1}{3}$ | $5\frac{3}{4}$ | $4\frac{4}{5}$ | 69 | $1\frac{2}{5}$ | $12\frac{3}{5}$ | $11\frac{1}{8}$ |
| 31 | $3\frac{1}{5}$ | 5 | 5 | 70 | $1\frac{2}{5}$ | $12\frac{3}{4}$ | $11\frac{1}{3}$ |
| 32 | $3\frac{1}{10}$ | $5\frac{4}{5}$ | $5\frac{1}{4}$ | 71 | $1\frac{2}{5}$ | $12\frac{9}{10}$ | $11\frac{1}{3}$ |
| 33 | 3 | 6 | $5\frac{1}{3}$ | 72 | $1\frac{2}{5}$ | $13\frac{1}{8}$ | $11\frac{3}{5}$ |
| 34 | $2\frac{9}{10}$ | $6\frac{1}{5}$ | $5\frac{1}{5}$ | 73 | $1\frac{1}{3}$ | $13\frac{1}{3}$ | $11\frac{4}{5}$ |
| 35 | $2\frac{1}{5}$ | $6\frac{2}{5}$ | $5\frac{3}{5}$ | 74 | $1\frac{1}{3}$ | $13\frac{1}{2}$ | 12 |
| 36 | $2\frac{3}{4}$ | $6\frac{1}{2}$ | $5\frac{4}{5}$ | 75 | $1\frac{1}{3}$ | $13\frac{3}{5}$ | $12\frac{1}{8}$ |
| 37 | $2\frac{3}{8}$ | $6\frac{1}{4}$ | 6 | 76 | $1\frac{3}{10}$ | $13\frac{4}{5}$ | $12\frac{1}{4}$ |
| 38 | $2\frac{3}{5}$ | $6\frac{9}{10}$ | $6\frac{1}{8}$ | 77 | $1\frac{3}{10}$ | 14 | $12\frac{3}{5}$ |
| 39 | $2\frac{1}{2}$ | $7\frac{1}{8}$ | $6\frac{1}{3}$ | 78 | $1\frac{4}{4}$ | $14\frac{1}{4}$ | $12\frac{3}{5}$ |
| 40 | $2\frac{1}{5}$ | $7\frac{1}{3}$ | $6\frac{1}{4}$ | 79 | $1\frac{4}{4}$ | $14\frac{2}{5}$ | $12\frac{3}{4}$ |
| 41 | $2\frac{3}{5}$ | $7\frac{3}{4}$ | $6\frac{3}{4}$ | 80 | $1\frac{4}{4}$ | $14\frac{2}{5}$ | $12\frac{9}{10}$ |
| 42 | $2\frac{1}{3}$ | 7 | $6\frac{2}{3}$ | 81 | $1\frac{5}{5}$ | $14\frac{3}{4}$ | $13\frac{1}{10}$ |
| 43 | $2\frac{3}{10}$ | $7\frac{4}{5}$ | 7 | 82 | $1\frac{5}{5}$ | 15 | $13\frac{1}{4}$ |
| 44 | 2 | 8 | $7\frac{1}{10}$ | 83 | $1\frac{5}{5}$ | $15\frac{1}{10}$ | $13\frac{3}{5}$ |
| 45 | $2\frac{1}{5}$ | $8\frac{1}{6}$ | $7\frac{1}{4}$ | 84 | $1\frac{6}{6}$ | $15\frac{1}{3}$ | $13\frac{3}{5}$ |

From the Southern Agriculturist for June, 1846.

ANALYSIS OF THE ASHES OF THE SUGAR CANE.

NEW-HAVEN, April 28, 1846.

MR. EDITOR—*My Dear Sir*: Knowing that some of your readers would take an interest in the following results upon the *ashes of the sugar cane*, obtained by Mr. STENHOUSE, I have been at the pains to condense them from a very valuable memoir published by this gentleman in a supplementary number of the London, Edinburgh and Dublin Phil. Magazine and Journal of Science (No. 183, Dec. 1845, p. 533), and herewith offer them to you, with a remark or two of my own, provided they meet your views.

| SUBSTANCES. | 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. | 9. | 10. | 11. | 12. |
|-----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Silica | 45.97 | 42.90 | 46.46 | 41.37 | 46.48 | 50.00 | 45.13 | 17.64 | 26.38 | 52.20 | 48.73 | 54.59 |
| Phosphoric acid..... | 3.76 | 7.99 | 8.23 | 4.59 | 8.16 | 6.56 | 4.88 | 7.37 | 6.20 | 13.04 | 2.90 | 8.01 |
| Sulphuric acid..... | 6.66 | 10.94 | 4.65 | 10.93 | 7.52 | 6.40 | 7.74 | 7.97 | 6.08 | 3.31 | 5.35 | 1.93 |
| Lime | 9.16 | 13.20 | 8.91 | 9.11 | 5.78 | 5.09 | 4.49 | 2.34 | 5.87 | 10.64 | 11.62 | 14.36 |
| Magnesia | 3.66 | 9.88 | 4.50 | 6.92 | 15.61 | 13.01 | 11.90 | 3.93 | 5.48 | 5.63 | 5.61 | 5.30 |
| Potassa | 25.50 | 12.01 | 10.63 | 15.99 | 11.93 | 13.69 | 16.97 | 32.93 | 31.21 | 10.09 | 7.46 | 11.14 |
| Soda..... | | 1.39 | | | 0.57 | 1.33 | 1.64 | | | 0.80 | | |
| Chloride potassium .. | 3.27 | | 7.41 | 8.96 | | | | 10.70 | 11.14 | | 16.06 | 0.84 |
| Chloride sodium | 2.02 | 1.69 | 9.21 | 2.13 | 3.95 | 3.92 | 7.25 | 17.12 | 7.64 | 4.29 | 2.27 | 3.83 |

Nos. 1, 2, 3 and 4 were very fine, full-grown canes from Trinidad, consisting of stalks and leaves, but without the roots; Nos. 5, 6 and 7 were similar canes from Berbice; No. 8 from Demarara; No. 9, of full-grown canes, but with few leaves, from the island of Grenada; No. 10 from Trelawny, Jamaica, consisting of transparent canes in full blossom, grown about six miles from the sea and manured with cattle dung; No. 11, of transparent canes from St. James's, Jamaica, growing about two hundred yards from the sea, being old ratoonns, and also manured with cattle dung; No. 12, young, transparent canes three and a half miles from the sea, and manured with cattle dung, guano and marl.

From these analyses, it appears that the cane for successful cultivation requires a very large quantity of silicate of potassa and also a considerable amount of the phosphates. Few cultivated plants, except the cerealia, require so much. Wheat, or any of the cereals, necessarily causes the removal of a portion of the valuable inorganic constituents of the soil, such as the alkalies, phosphates, &c. which can only be returned to it indirectly; but with sugar the case is quite otherwise. Sugar is a purely organic substance, consisting of carbon and the elements of water, all of which can be derived from the atmosphere, and contains neither alkalies nor phosphates: so that if the ashes of the canes were carefully collected and returned to the soil in an available state, there is no reason why cane might not be grown upon the same lands almost indefinitely.

In the West Indies, where wood is scarce, the crushed canes are employed as fuel, under the coppers of the boiling-house, to concentrate the syrup, and as the heat required is great, a large amount of the silica and the alkalies present is converted into a hard, insoluble glass, which in this form being useless, is thrown away. We can therefore readily understand the reason of the rapid exhaustion of their sugar-lands, and the comparatively slow wearing out of those in Louisiana, where from the abundance of wood, the cane-trash is never thus employed, and where in addition to the inorganic ingredients of the cane, the soil receives (at least where the plantership is what it ought to be) the almost equally valuable mineral constituents of the wood itself.

Yours, very obediently,

CHARLES UPHAM SHEPARD.

LONGEVITY IN HORSES.—The Marquis of Ramecroix has just lost an Arab mare, by death, which was sixty-three years old, but which of course had long been useless. Mr. Jesse Hill, of Cheddar, the steward of the Marquis of Bath, has a mare he is ready to prove to be in her fiftieth year. She is daily used in harness, her chief food being bran, potato rinds and grass.

A PLEASANT VISIT TO AN EMINENT FARMER.

THE writer of the following, with whom we ought to be acquainted, having been in constant personal intercourse with him for nearly threescore years, allows us to transfer it, with such corrections as may be necessary, to the pages of THE FARMERS' LIBRARY; and as he says we were of the party, we dare not deny it, but confess the corn! Were we to add a remark or two of our own, the result of some agreeable personal intercourse with excellent, plain, practical farmers in the neighborhood of Saratoga, we should feel bound to indicate two glaring defects in the habits and management of most of them. Reader, do you wish to know what these are? We will tell you: They don't (some of them) provide themselves with *ice-houses*, which they might do so cheaply with so much satisfaction and profit; neither do they ever nib a pen in the way of *keeping accounts of outlay and income*!! Need we dwell upon the improvident and reproachful omission in both cases! No; it is too obvious. Where so much ice-cream is eaten, the *farmer* should supply it ready-made to the hotels, as they do near Philadelphia. But only think of sensible and otherwise well managing, economical and industrious farmers, even Presidents of Agricultural Societies, having *no ice-houses*, and *keeping no accounts* of income and expenditure!! But our object is to introduce a narrative—not to write an essay! We will only add to the testimony of our correspondent, that this President in his shirt-sleeves entertained us gracefully, cordially, and with an animated, well-informed and highly interesting conversation, on his part, on the various branches of his business. His family are all of the "*peep o' day boys*" stock; and every department, eating, and sleeping, and rising and working, all proceeds with *uniformity* and therefore with certainty as to results—three horses, in nice order, to do the work through the week and take the family to meeting on the Sabbath.

From the Saratoga Republican.

A VISIT TO THE PRESIDENT OF AN AGRICULTURAL SOCIETY, WITH AN ACCOUNT OF WHAT OCCURRED—INTERSPERSED WITH SOME REFLECTIONS BY THE NARRATOR—ALL CONTAINED IN TWO LETTERS, OF WHICH THIS IS

NO. I.

"*I like to be particular.*"

SARATOGA, 28th August, 1846.

MR. EDITOR: Happening to be present on occasion of a chance visit, a few days since, to the President of an Agricultural Society in — county, N. Y., a brief relation of what transpired may, to your southern readers, serve to lift the curtain on the life and habits of northern farmers. The office of President of a society for the improvement of the noble art of Agriculture, under the patronage of the Empire State, warrants the presumption that the host on this occasion is above the average standard in personal consideration and intelligence, and quite up to it in style of living. To proceed:

Two gentlemen, on an equestrian excursion from "the Springs," for the sake of exercise, and to take a look at the country roundabout, stopped near an antiquated, very ordinary-looking dwelling, on the road side, and inquired respectfully of a lady at the door, "Pray, Madam, can you inform us where Mr. C— lives?" for they had heard of him as the Rural Philosopher, or KLYOGG of the neighborhood. "Yes, sir," was the polite answer; "this is his residence, and there he is himself, at work in the field," pointing to a hill-side meadow, which he afterward told us had been sowed over and harrowed down to timothy by his father, fifty-two years ago,* and from which a crop of hay had been taken every

[* We have since learned, in the neighborhood of Lebanon Springs, that it is no uncommon thing to mow the same meadow fifty years or more in succession. This explains, in part, the uniformly high price of these lands; for the greater part of them, upland and lowland, is laid down to grass, with which they combine sheep raising and dairy husbandry. When a man buys one of these farms, he knows that, without cultivation, every acre will yield a certain amount of a salable commodity.

year since, without ever having been manured or top-dressed, except last year that a ton of plaster had been divided between it and another lot, which had so added to the bulk of the crop, that this year he will cut "between two and three tons to the acre." In this lot he was at work, with his two sons, of seventeen and nineteen, and two men hired for this particular occasion.

The timothy had been left longer in the field than was designed or proper, waiting for weather that he might be sure, as he said, "to *have* it after making it," meaning that no accident should happen between the mowing and the housing. The process was simply this: as the men went over, making exceedingly close and smooth and beautiful work of it, at the rate of a little more than an acre a day each, his younger son scattered after them with a wooden fork, made on a rainy day, and costing next to nothing. Be that noted, as "straws show which way the wind blows." In the afternoon the grass was to be thrown into cocks, and the next fair day to be spread to the wind, and thence taken to the barn, or rather, in this case, to be *stacked*; for his barn, 36 by 60, 19 feet pitch, was filled to overflowing.

To me it was a highly interesting operation to see these young men, without even stopping to look at us, moving on with their work with so much cheerfulness, alertness and sleight-of-hand, not stopping, as *skulkers* are so apt to do, every five minutes, to consume five minutes more in wetting their scythes, or wetting their whistles.

Seeing that there were two gentlemen, strangers, at his door, Mr. C. came at once to the house, and the strangers introduced each other, when at once, in a way equally removed from boorish awkwardness and unmanly servility, but rather with a natural ease, and even gracefulness of manner, he invited them to alight, to let their horses be fed, or at least to be put away, and to "walk in and refresh themselves."

This man, for he was "every inch a man," who came in his shirt sleeves, from his work in the field, stood about six feet high in his stockings, and weighed about 220 or 30, with a head on his shoulders that would not have disfigured a bust of Cincinnatus himself.

But, sir, it may be well that I should give you the whole *dramatis personæ*. It leaked out that one was the veteran Editor of THE FARMERS' LIBRARY, who founded the old American Farmer, in 1819, and the other an opulent Southern planter, Col. F. W. P., who had a few years since voluntarily retired from Congress, and more recently declined the offer of the first foreign mission abroad, wisely preferring the pursuits and the quiet of the country, with its wholesome exercises and intellectual enjoyments—the true *otium cum dignitate*, most becoming and desirable to an independent American agriculturist.

Well, Mr. Editor, scarcely were they seated in the house, before they entered upon all the operations of the field—the stores of the barn—the secrets of the dairy, and even the contents of the stercorary. You would have been amused to witness the quiet way in which the cosmopolite Editor began to catechize our northern President of an Agricultural Society, the southern planter all the while planting a home-thrust here and there, to make the catechism the more thorough and complete; until the way they wormed his management out of Col. C. was a caution! Of the two interrogators, you could not well say which was in the lead. Both followed up the chase with the eagerness of dogs "running to kill," while he, like a wary old boar of the black forest, or a Numidian lion, kept his pursuers at bay, allowing no vantage to be taken of him. If their questions were rapid and searching, his answers were prompt and full. He gave the gentlemen, with all civility, a "Roland for their Oliver," I tell you! To make a long story short, Mr. Editor, (not very short, the reader will say, after all,) the sum of their inquiry into his agricultural condition and management amounted to this:

His farm, near Lake Saratoga, consists of 100 acres, of which 20 are in wood. His force is made up of himself, his wife, his daughter of 16, and his two sons of 17 and 19 years of age.

With these resources he lives abundantly, increases his crops, improves his estate, and is pushing the education of his children, in winter, rather beyond the common standard. He indulges in a wagon and pair of horses, that work through the week, and take his family to meeting on the Sabbath, and at the end of the year nets from two to three hundred dollars to be added to his capital.

But, to go a little more into detail. His stock of domestic animals, well kept

on this farm of 100 acres, (of which 80 only are under the plow or in permanent pasture,) consists of about 20 hogs, little and big, 16 head of neat cattle, 3 horses, and 50 head of sheep. His sheep yield him an average clip of 3 pounds per head, and the wool is exchanged at a neighboring factory for, or made into cloth and casinet, for his own use : so that there is no outlay on that score. "A penny saved is two pence got," as Poor Richard says. His sheep are, for the most part, pastured on a lot of 10 or 12 acres.

The Editor aforesaid was earnest in persuading him that he would find a great saving in the entire substitution of mules for horses : urging that of all machines on a farm, a horse, especially an idle one, was the *most expensive*, even worse than an idle man or woman, except that though their mouth goes, their *tongue does not* ; but with the prejudice against this useful animal, which is universal if not instinctive, throughout Pennsylvania, New-York, and perhaps all New-England, Mr. C. intimated that his family must have a conveyance to meeting, and that neither they nor he would consider it comely or respectable to *drive mules* ! Thus, after all, there are points on which you may touch the pride of these northern people, and on which they are as ready as some others, to sacrifice pecuniary considerations for sake of *appearances*. In vain did the Editor, who seemed very *muleishly* inclined, urge, that in some countries, as in Spain and Portugal, and the Brazils, the use of mules is reserved as an *aristocratic privilege* to noble and royal families. This republican farmer, this American Klyogg considered himself "as good as any nobleman of England." In vain did the Editor tell him that in New-Orleans, where so many men make their living by the use of the dray, they would not have a horse as a present—that he had seen ladies driving mules in their carriages into Augusta, in Georgia, and that he had himself ridden from the residence of the Farmer of Ashland to Gen. Shelby's, in his private carriage, behind a pair of mules, 8 miles within the hour, and without the touch of whip.

All would not convert the President of the Agricultural Society to the use of this despised hybrid. You might as well "pour water on a goose's back,"—while the truth is that, especially with their light land in this county, millions might be saved by using and driving the mule, in place of the shorter lived, more luxurious, more sickly, and most expensive of all beasts—the horse. I could not myself help reflecting on the force of this prejudice, at the sight of a team of frail horses, every day hauling brick into Saratoga from Mr. Denton's, a very industrious and thrifty farmer in the neighborhood : knowing, as I do, how much mules are prized wherever their value is known, especially for that steady, every-day, measured drudgery—such as working in machinery, hauling iron ore, working on canals—where the labor is constant and steady, day in and day out, from year's end to year's end. Ask the Ridgelys, the Ellicots, and the Pattersons, of Maryland, and they will tell you on this point, as General RIDGELY, of Hampton, once did the writer, (your spy on this occasion,) that if you would fit them out, in the commencement of the iron business, with a set of horses, and require them to keep them up by repairing wear and tear, for a series of years, they would not accept them as a gracious gift.

Mr. C. was of the common opinion among people who are not acquainted with mules, that they are very difficult to break, and require to be "broken over again" every once in a while. He seemed surprised when the Editor told him they were much easier than a horse to be broken to the plow or the wagon : and yet more when the southern planter told him that, in the South, all they had to do was to *get them hitched* to the wagon, and *drive them off at once*. For myself, there needed no argument in favor of oxen or mules, for I had read all that had been written by this Editor himself, of the natural history and economy of both, amounting to more than has been said in their favor by any (I was going to say, friend) either living or dead, of these patient and speechless creatures—even to the relation of the story from the writings of Rev. Dr. Sterne, where he recounts how two nuns, deserted by the muleteer, and getting benighted in the mountains, could not persuade the mule to advance another step, until they bethought themselves to have recourse to a certain expedient.

The fact is that the prejudice against mules is like that against snakes—both, perhaps, deducible from scriptural injunctions, one of which says, the heel of the son of Adam shalt bruise the serpent's head, and the other that thou shalt not let thy cattle gender with divers kinds—meaning, perhaps, the horse and the

ass. And yet, how strange that the produce of this unscriptural connection should exceed either of the progenitors in so many qualities that give usefulness to each—in size, strength and activity, excelling the one in longevity, hardiness, sure-footedness, caution and self-possession—in traveling over dangerous precipices, so much excelling the nobler of the three. After all, give me a mule for being “rough and ready” to work at all times, and to last next after iron. NEMO.

THE RIGHT WAY TO MANAGE A FARM.

To the Editor of The Farmers' Library :

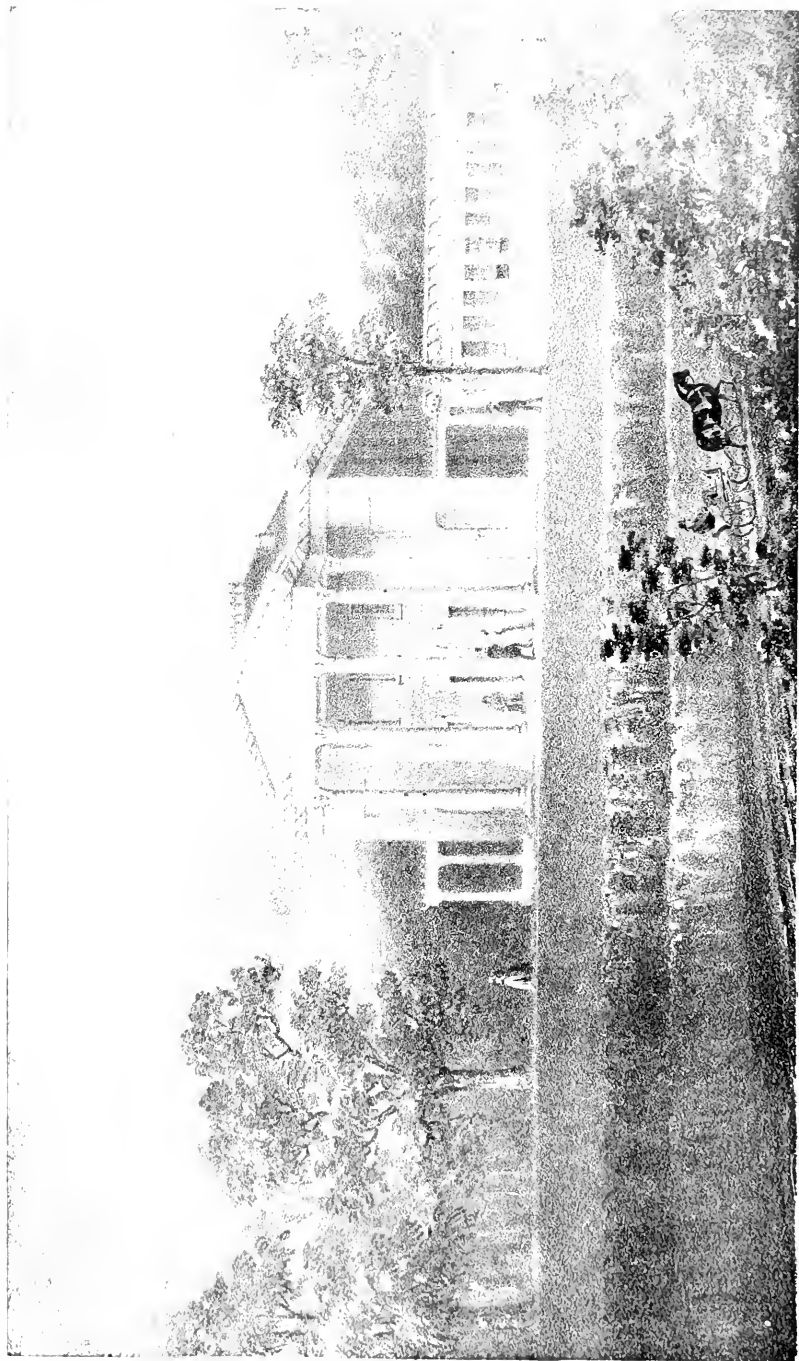
CHARLESTON, August 15, 1846.

Dear Sir: Having just read the communication of “S. B.” in your July No. I take the liberty of presenting you with an *oasis* which the admirer of scientific planting may meet with in his route across the *desert* laid down by S. B. In the summer of '45, while wending my winding way through South-Western Georgia, I had the misfortune to lame a valuable horse while crossing one of the “*corduroy*” bridges indigenous, I believe, to that region. It was four miles to the nearest plantation in my rear, and nine to the next in my route; so I shouldered my saddle-bags and took the *back track*, leading my horse. The place to which I was now *backing*, I had but a short while previously passed, but not sufficiently contiguous to enable me to form any conjecture as to the chance of my being enabled to obviate the “*phix*” in which I was placed.

I reached my destination about noon, and found the proprietor just in from the labors of the forenoon. The good taste displayed in the different buildings, &c. which presented themselves to my view, notwithstanding they were constructed of *logs*, gave me considerable hope that I should not be long detained on my travels. Upon making known my situation, I ascertained that my only chance to purchase another horse would be up in Americus, 27 miles distant—to which place the proprietor happened to be going in the morning, and kindly offered me a seat in his buggy. By this time the melodious peals of the dinner-horn saluted my auriculars, and the pugnacious condition of my gastric functions made an invitation to *pot-luck* peculiarly interesting, and not to be declined—for *here* I felt assured that cow-peas, corn-bread and ham were not the order of the day.—Arrived at the domicile, and our ablutions performed, I was escorted by my host to the dining apartment—a commodious shed, erected for summer use, under the wide-spreading boughs of an ancient oak—where I was introduced to the landlady, whose fine personal appearance drew from me my best city bow and salutation, which was returned with such dignity and lady-like composure as to put me at once upon my Ps and Qs. The dinner I found most excellent, and of a variety that would have flattered the most fastidious *gourmand*.

After dining, my host invited me to a stroll through his *grounds*, which, he informed me, contained exactly 75 acres under cultivation. Passing the garden, 2 acres, I noticed flowers, shrubbery, and vegetables, of every variety, blending in beautiful contrast, and exhibiting a skill that I had noticed in no other garden. The different *patches* of corn, cotton, peas, potatoes, &c. &c. &c. presented a neatness of cultivation and luxuriousness of growth that I never before observed, even in the fancy farms of the North. Expressing surprise at the small quantity of land in cultivation, for his force, he informed me that he planted fully as much as could be properly tended. His products, however, were astonishing. His yield of corn was, the past season, 65 bushels to the acre, and the growing crop would be much larger. I do not now remember the yield of cotton, but it was very heavy. I have seen nothing in Mississippi or Louisiana to come up to it.

His barn, stables, mill, gin-house, &c. were upon a new plan to any I had seen. The different *manure bins* showed that this article claimed particular attention, and the proprietor informed me that he never cultivated more land than he could keep well manured; and that, notwithstanding the smallness of his plantation, his crops would outmeasure many of his neighbors' who cultivated four times the quantity. Amid all my travels through the States, I have never found an individual who appeared better informed upon all points relating



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THE UNIVERSITY OF CHICAGO

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CHICAGO, ILL. U.S.A.

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to planting. Instead of adding field to field, his plan had been to make one acre do the producing of five of the ordinary planters that I had met with. He had straw-cutters, corn-shellers, plows, harrows, &c. of the newest and most approved kind; raised everything that he consumed, as far as the production could be obtained.

But I shall weary you. When I returned to this city, I noticed, at *Head's*, your valuable periodical, to which I subscribed, and I send it to my Georgia friend every spring and fall, by his most contiguous merchant. He is, however, ignorant of the donor. I am now on the second volume, and he, no doubt, makes admirable use of the many facilities it offers. He is a model planter, and it is to be regretted that he has so few associates. If his system was universal at the South, we should be the richest and most happy people on the globe. But while our planters go on adding field to field, paying no attention to the improvement of their soil, I see nothing to prevent the South, in a few more years, becoming a waste, howling wilderness.

Yours truly,

CHS. FOSTER.

¶ It would appear that nothing can sufficiently impress upon farmers the importance of the system pursued by the farmer here alluded to; whereas one would suppose that the obvious saving in the item of labor alone, between cultivating one acre and cultivating three to reap the same product, would of itself be sufficient to make any man of common sense as reluctant to waste, or, which is the same thing, fail to collect manure, as he would be to pull out of his pocket and throw away the worth of it in money! [*Ed. Farm. Lib.*]

ROSWELL HOUSE,

GROUND. TREES AND FLOWERS.

NOT as a model to be rashly imitated by those who are, nor to excite the envy of those who are not, able to build such magnificent establishments as the Roswell House, at Paterson, N. J., have we presented a view of it; but to show, as poor ill-fated Sam Patch used to say, that in our country, too, "some things can be done as well as other some"!

True, it is written that man shall make his bread by the sweat of his brow; but, as we opine, society would make slow progress in civilization, if it were requisite that every mother's son of us should be eternally at the laboring oar. Of all men, in whatever condition, none is to be more contemned, perhaps we should rather say pitied, than your constitutionally *idle man*! with no disposition, or, it may be, necessity, for physical exertion, and with a mind too rude, or too barren, for any sort of cultivation or enjoyment. Still, we are no admirers of, neither can we join company with any one in traveling back to that state of uncivilized existence, wherein every living creature is compelled to hunt, to fish, to milk the cow or the kid, or to *starve*. We are rather of the opinion with the author of the "Vestiges of Creation," who thinks it necessary for civilization that a portion of the community should be placed above hard and engrossing toils. Man's mind is subdued, says he, like the dyer's hand, to that it works in. In rude and difficult circumstances, we unavoidably become rude, because then only the inferior and harsher faculties of our nature are called into exercise. When, on the contrary, there is leisure and abundance, the self-seeking and self-preserving instincts are allowed to rest, the gentler and more generous sentiments are evoked, and man becomes that courteous and chivalric being which he is found to be, among the upper classes of almost all civilized coun-

tries. We incline with him to the opinion that among the things requisite to the improvement of the arts, and a high degree of civilization, are a set of elegant homes, ready and sumptuously furnished, with luxurious stores and appliances of all kinds, and above all, as he says, complete social enginery—in other words, strong laws, and a strong and honest disposition of executive power, to enforce them, to give the *most unquestionable security to life and property*.

We hold nothing to be more pernicious than a jealousy of the poor toward the rich, whose fortunes, acquired generally in this country by industry, give those poor employment; nor any more worthy to be regarded in the light of mad dogs, than demagogues who would appeal to or excite their animosity against those whose capital creates demand for their labor.

But truly we hardly know how Roswell House should have drawn from our pen such a train of reflection, for we meant only to give a picture of an imposing, capacious, and hospitable mansion, and to *recommend the grounds to general imitation*. And *why*? Because they combine what every where indicates good and salutary taste, and one which at once shows and promotes the best sort of affections—to wit, *the love of beautiful trees, and choice fruits, and various flowers*—a taste which has been almost common to good and great men from the days of Virgil and of Spenser to the present.

See, in the following lines from the latter, how, better even than some practical farmers, he understood both the habitation and uses of many of our forest trees:

“And forth they passe with pleasure forward led,
 Joying to hear the birds sweete harmony,
 Which therein shrouded from the tempests dred,
 Seemed in their song to scorn the cruel sky;
 Much can they praise the trees so straight and high;
 The sayling Pine, the Cedar proud and tall,
 The vineprop Elm, the Poplar never dry,
 The builder Oak, sole king of forests all,
 The Asper, good for staves, the Cypress, funeral.

“The Laurel, meed of mighty conquerors
 And poets sage, the Firre that weepeth still,
 The Willow, worne of forlorne paramours,
 The Eugh, obedient to the bender's will,
 The Birch for shafts, the Sallow for the mill,
 The Myrre sweet bleeding of the bitter wound,
 The warlike Beech, the Ash for nothing ill,
 The fruitful Olive, and the Platane round,
 The carver Holme, the Maple sildom inward sound.”

The gentle reader will excuse only two more lines, and these from his own the great poet of Agriculture, VIRGIL:

“Fraxinus in sylvis pulcherrima, pinus in hortis,
 Populus in fluviis, abies in montibus altis.”

Connected with Roswell House are 95 acres of land, 62 of which are included in one lot, surrounded by a stone wall, and *Maclura* hedge, or board fence, with *no division fences*.

It would not be easy to conceive a ruder and more unmanageable piece of ground than that was which is now occupied by this superb mansion, and the ornamental and fruit trees that adorn and enrich it. A black alder swamp, of five acres of mud and quick-sand, has given way to two large ponds or miniature lakes, where swans, which, according to an old notion, “cannot hatch without a cracke of thunder,” are ever sporting their graceful forms.

Between these two ponds there is a fall of five feet, of which Mr. C. took advantage, by raising a dam, and placing a wheel of eight feet diameter, to put in motion, by the flow of the upper pond, a forcing-pump, supplied not from the

pond, but from a well at the wheel-house, with the purest spring water, which is forced to the top of his house, 100 feet above its level; and this supply is equal to all the requirements of his family, his stables and cow-sheds, and to irrigate his garden and grounds.

But what, as we before stated, is most to be admired, in our estimation, is the *number and variety of trees* which have been added to the few white and black oaks, and chesnuts, that stood at the foot of the hill when he commenced the improvement of this rude and ill-shapen piece of land. If the reader should ask why we have taken the space occupied with a not quite perfect list of these, the answer is ready. This is a beautiful species of improvement, which almost any farmer may imitate; while many of them fail, even in that simplest and cheapest, if not most agreeable of the cardinal duties of life—for they do not even “*plant a tree.*”

These trees planted by Mr. Colt are all in the most flourishing condition, but not without care and attention. Children won't thrive that are not *sometimes* fed, combed, and washed. One of them, however, the Linden, (*Tilia europæa*), seems to have attracted the bitter enmity of an insect borer, that with his saw encircles the young branch in the neatest possible manner, leaving just enough at the heart to hold on until broken by the first breeze that shakes it—just as false friends drop off and disappear when misfortune threatens or slander assails their benefactor.

Besides these, there are several hundred fruit trees, imported from England and France—such as pears, plums, apples, and peaches—in addition to some 1500 of Mr. C.'s own raising, or procured from Rochester, Cincinnati, or Boston, of the choicest varieties.

In vineyard, in open ground, there are 700 choice European vines, of the best kinds, besides 300 of the best European grapes, which are cultivated according to the Thomery plan at Fontainebleau, where the best grapes are produced for the Paris market; and he is now putting out 700 to 1000 more. He raises a choice collection of grapes under glass, and his supply of black Hamburgs, Victorines, black and white St. Peters, Muscat of Alexandria, Frontinacs, and “Cambridge Botanical Garden,” will yield him, it is estimated, more than 1000 pounds of as fine grapes as are raised in this country; and, using the Yankee's privilege, he guesses he will have from out-door vines over 5,000 pounds of similar grapes.

He finds *whale-oil soap suds*, 1 pound of soap to 15 gallons of water, the best wash for fruit trees. It kills all kinds of vermin, opens the pores of the bark, and makes it smooth and healthy; and, if a quart of it happens to run down to the roots, so much the better. For protection of his peach trees, he first cuts out the enemy at the root, and then paints the rascals' damaged and vacated quarters with *gas tar*. This proves, likewise, an excellent protection to the Mountain Ash, which is also liable to attack and depredation at the same point. This Mountain Ash, by-the-by, is one of the enviable boasts of this northern country. We are not aware that it flourishes south of the Chesapeake.

Mr. C. has near half a mile of luxuriant hedge of the Osage Orange, (the *Maclura aurantiaca*), which he much prefers to all other plants for hedges, and which is so much admired at Mr. Cushing's celebrated villa, near Boston. He agrees with Gen. Dearborn, in thinking the Buck-Thorn the next best.

Experiment is being made at Roswell House with the Cherokee Rose, (not the least of the many good and beautiful boasts of the sunny South.) It might

have been well to have ascertained the result of those which we procured to be planted, many years ago, at Green Mount, then the hospitable residence of the late ROBERT OLIVER. Forever honored be his memory for his public spirit and benevolence!

The green-house, as shown in the accompanying sketch, is in dimensions 80 by 37 feet, with a forcing-house 35 by 14, and filled with a variety of fine plants, but not equal in rarity or variety to Mr. Manice's, on Long Island, or to professional collectors and cultivators—as he raises only to exchange or give away, which is done to his friends with a lavish hand, saying, as the liberal man who can afford it always does to his friend, “what is mine is thine.”

For reasons that do more credit to his feelings than his arborical taste, Mr. C. professes to take most pride in his *Horse-Chesnuts*, which he raised from the nuts, and planted with his own hands in 1794.

And now, having very hastily, for want of more time, given a sort of outline sketch of Roswell House and Grounds, should the cynical reader demand *cui bono?* for what good? we repeat that those who have money to lay out in a delightful residence may have the benefit of its plan, or beat it if they can.—While the many are too lazy, few are so poor but they might turn to advantage such a beautiful and praiseworthy example of taste and perseverance in the simple and elegant arts of arboriculture and horticulture, as we have here presented; though we regretted not to find, in a collection so extensive and well-chosen, the Tamarac or Hackmatac, (*Larix americana*) which abounds in the neighborhood of Lake Saratoga, and which, to our taste, is the prettiest of the Pine family.

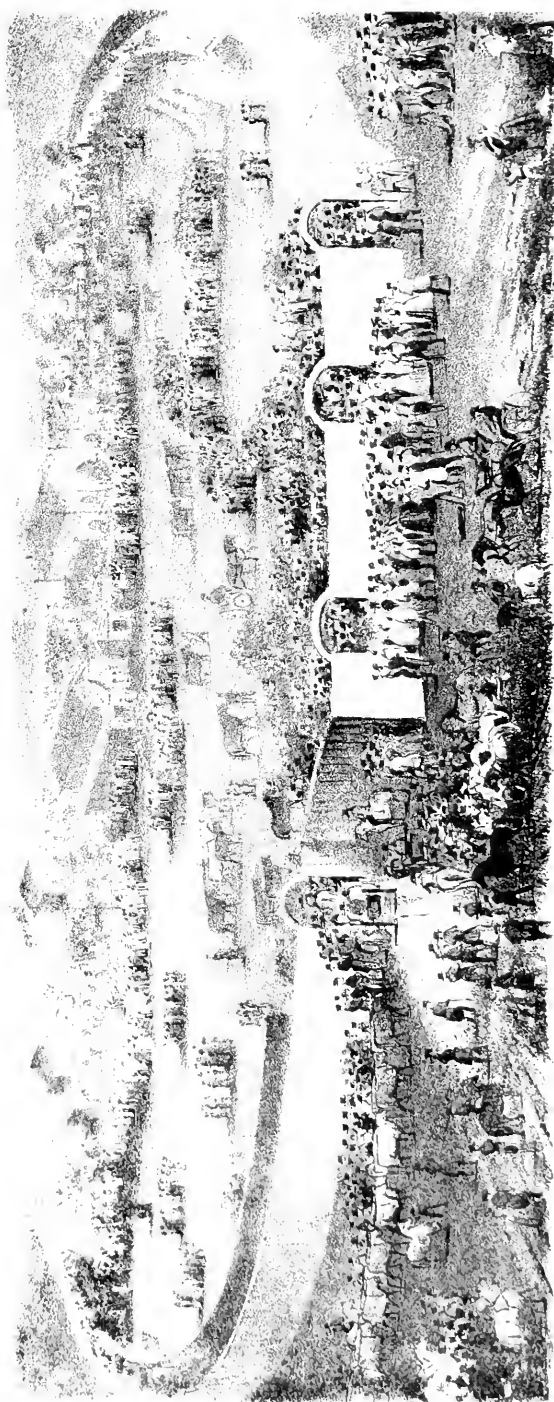
For a better description, we might have referred to one which we remember to have seen in that excellent journal, the AMERICAN AGRICULTURIST, but have not the volume that contains it.

LIST OF TREES GROWING ON THE GROUNDS OF ROSWELL HOUSE, NEAR PATERSON, N. J.

With their common and botanical names.

| | |
|---|--|
| English Oak, (<i>Quercus robur</i> .) | Common Willow, (<i>Salix alba</i> .) |
| “ Sycamore, (<i>Acer pseudo-platanus</i> .) | Weeping Willow, (<i>Salix babylonica</i> .) |
| “ Linden, (<i>Tilia europea</i> .) | Weeping Birch, (<i>Betula alba pendula</i> .) |
| “ Walnut, (<i>Juglans regia</i> .) | Button-wood Tree (<i>Platanus occidentalis</i> .) |
| “ Yew, (<i>Taxus baccata</i> .) | Catalpa, (<i>Catalpa syriaca</i> .) |
| “ Elm, (<i>Ulmus campestris</i> .) | Black Spruce, (<i>Abies nigra</i> .) |
| Dutch Elm, (<i>Ulmus c. major</i> .) | Hemlock Spruce, (<i>Abies canadensis</i> .) |
| Scotch Larch, (<i>Larix europea</i> .) | White Pine, (<i>Pinus strobus</i> .) Same as Weymouth |
| Norway Spruce, (<i>Abies excelsa</i> .) | Pine. |
| Weymouth Pine, (<i>Pinus strobus</i> .) | Balm of Gilead, (<i>Picea balsamca</i> .) |
| Cedar of Lebanon, (<i>Cedrus libani</i> .) | Arbor Vitæ, Chinese, (<i>Thuja orientalis</i> .) |
| Indian Cedar, (<i>Cedrus deodara</i> .) | “ American, (<i>Thuja occidentalis</i> .) |
| Imperial Paulownia, (<i>Paulownia imperialis</i> .) | Holly, European, (<i>Ilex aquifolium</i> .) |
| Mountain Ash, (<i>Pyrus aucuparia</i> .) | Large-flowered Magnolia, (<i>Magnolia grandiflora</i> .) |
| Weeping Ash, (<i>Pyrus a. pendula</i> .) | Glaucous-leaved do., (<i>Magnolia glauca</i> .) |
| Copper-leaved Beech, (<i>Fagus sylvatica cuprea</i> .) | Cucumber Trees, (<i>Magnolia macrophylla</i> & <i>cordata</i> ? |
| Purple or Blood-leaved Beech, (<i>Fagus s. purpurea</i> .) | &c.) |
| Irish Yew, (<i>Taxus baccata fastigiata</i> .) | Chinese Magnolias, (<i>Magnolia conspicua</i> ; <i>purpurea</i> , |
| Laburnum, (<i>Cytisus laburnum</i> ?) | <i>gracilis</i> ; &c.) |
| Ailantus, (<i>Ailantus glandulosa</i> .) | Black Walnut, (<i>Juglans nigra</i> .) |
| Abele Tree, (<i>Populus alba</i> .) | White Hickory-nut, (<i>Carya alba</i> .) |
| Spanish Chesnut, (<i>Castanea vesca</i> .) | American Chesnut, (<i>Castanea vesca americana</i> .) |
| French do. do. | Butternut, (<i>Juglans cinerea</i> .) |
| Sugar Maple, (<i>Acer saccharinum</i> .) | Wild Cherry Tree, (<i>Cerasus virginiana</i> .) |
| Soft Maple, (<i>Acer ricinocarpum</i> .) | Persimmon Tree, (<i>Diospyros virginiana</i> .) |
| American Elm, (<i>Ulmus americana</i> .) | White Mulberry, (<i>Morus alba</i> .) |
| Weeping Elm, (<i>Ulmus a. pendula</i> .) | Black do., (<i>Morus nigra</i> .) |
| Slippery Elm, (<i>Ulmus a. fulva</i> .) | Chinese do., (<i>Morus alba sinensis</i> .) |

NOTE.—The botanical names as given above are in accordance with the system adopted in Browne's Trees of America—which we heartily recommend to every one who professes, or who would have his family contract, a fondness for this beautiful branch of rural study and recreation.



THE STATE FAIR.

THE necessity of sending the sheets of this work to the stereotyper to be cast, if possible, before the 20th of the preceding month, offers an explanation which may serve us with correspondents generally, and will account for the crudeness of the little we can say in this number as to the late State Fair at Auburn.

If superb weather, and an immense concourse of people, with a beautiful site and ample arrangements for the exhibition, could confer on it the character of usefulness, and indicate progressive improvement in the various branches of agricultural industry which those exhibitions are designed to benefit and exemplify, then may the friends of the cause congratulate themselves that the great object of these State expenditures, and of the pains taken by the officers of the State Society, is in a fair way of being realized. Not so sure, however, are we of that result, when we come to analyze the motives of the immense crowds that attend, and the materials of which these exhibitions are generally made up.

We had hoped to receive, through some channel, an official statement of the list of prizes, such as might have been with confidence recorded and referred to; but on examination of the account which, of all we have received, seemed to wear the strongest aspect of authenticity, we find it so full of errors that we have determined to postpone, for the present, what it may be desirable to preserve as a record of proceedings sanctioned by official authority.

The account to which we have referred, in an Albany paper, states, for example, that Messrs. Corning and Sotham obtained premiums for their *Durham* cattle—whereas they had no *Durham* cattle on the ground; and, farther, that Mr. VAIL, of Troy, and Mr. HYATT, of Rochester, got premiums for their “imported” cattle. Now, Mr. Vail got the first premium for his imported improved Short-Horn cow, the beautiful Lady Barrington—of whom we have a perfect likeness; but Mr. Hyatt's premium was for a heifer of the Hereford breed, from Mr. Corning's fine herd of that race of cattle. Of Mr. Corning's Hereford prize cow we have also a portrait, taken at our instance—having selected her for that purpose, as a fair specimen of Herefords, before the exhibition. Portraits have also been secured of CHAMPION, the superb prize colt, property of Mr. GRINNELL, which trotted his mile at 2 years old in 3m. 5s.; also of the fine Morgan horse from Vermont, as well as of other animals. Mr. Grinnell has secured the appearance of Champion in an early number of the *Monthly Journal of Agriculture*; so has Mr. Corning of his prize cow; but what other animals will be so distinguished will depend on the pleasure of their owners, and other circumstances. It may be well at once to state that, for no consideration, can inferior animals, or coarse and bad representations of the best, get admission to this work. The terms of subscription, though low in proportion to its costliness, are too high to admit of that; and, besides, the publishers have some pride in their design to illustrate the various arts employed in the publication of the work.

But as to this exhibition, and all of its kind—it is not numbers of people, nor costly arrangements, nor excellence of a few things or animals, imported or otherwise, that can impart to them the character of public usefulness, or give promise of regular, general and permanent improvement. We must look more at the

character of those in attendance, and whether they constitute the bone and sinew—the staple of the agricultural community of the State; and whether the animals and other things produced go to show that the farmers generally have taken hold and embarked heartily in the cause, with a conviction of the utility of these shows and with a determination to excel in the various branches of industry in which their capital is embarked and on which their labor is bestowed.

Contemplating the Auburn exhibition in this light, the question is, whether it demonstrated a general and praiseworthy spirit of rivalry, and a marked advance in a way to assure us of continued and general melioration of agricultural life and pursuits. In the first place, it is a source of unfeigned pleasure to testify that in the most important department, agricultural implements, there were abundant proofs of zeal and ingenuity on the part of those who devote their genius and labors to these objects—which we the more readily denominate as the most important, because some of them, as the plow and the harrow, lie at the bottom, and serve, as it were, as the entering wedge to all agricultural operations; and all of them are designed to achieve that great desideratum in our country—*economy of labor*. In this branch of the exhibition there was most satisfactory evidence that the *mind is at work*, and that we may hope to realize for Agriculture some degree of that improvement which has been effected in the vehicles and machinery appropriated to commerce, manufactures, and other arts and trades. But even these improvements have been stricken out, not so much by any action of the mind within the circle of practical farmers, as by the stimulus which the wants of Agriculture have applied to the mind of the mechanic—of men who live in nearer communion and rivalry with each other, and who have been brought, by encouraging influences, to *think*—yes, in a word, to *think*. But look again over the field for proofs of improvement in the race of domestic animals, and especially of cattle, so important in the agricultural economy of the State of New-York—emphatically a butter, a cheese, and a beef-growing country! After using every persuasive to prevail on the farmers of the country to bring forward their bulls, and cows, and heifers, of the country breed—offering, year after year, the same premiums as for the various races of imported stock—what is the result? What was the number of competitors? and what were the signs of bulls of better form, and cows of deeper milking properties, or heifers of fairer promise, than might have been gathered up twenty years ago in any five miles square in any part of the State? Let it not be said—we sincerely wish it could be said—that improvement has been pushed to the *ne plus ultra* in that department. Were that true, how should we account for the recommendation of the Committee that these premiums be hereafter withdrawn, on the ground that the *prizes are worth more than the animals to which they are awarded*? What can be the influence under which the farmers of the State generally hold back from this area of honorable and praiseworthy rivalry? Is it that they indulge in an unworthy, or a well-founded suspicion of trickery and management in the bestowment of the premiums? or that they are restrained by a puerile shame to exhibit their best in the same field with imported animals which have been carried to the highest point of improvement that wealth and skill in animal breeding and physiology can raise them? Of the milch cows of “country breed,” it might be well to be silent, on the score that the least said is the soonest mended, and leaves less chance of being gored. Still we may venture to wonder why it was that the first premium was given to the mother of “three twin” calves! Prolificity in the *hog* is a quality to be promoted, but even in that unclean beast it has

its limit of usefulness—unless, perhaps, it be in Texas, or California, or Oregon, or some of our new territories, acquired, or to be acquired, by hook or by crook—but, for *neat* cattle, we should think one, or at most two calves, would suffice and be as many as the mother could well bring up. We have heard of sows having twenty at a litter; but, rather than encourage such extravagance in pig bearing, we would sooner give a premium to the owner of a sow that should be content with littering eight, provided he would bring them like eight such as we saw a few days since in the piggery of Mr. B. A. Hall, of Lebanon, which will weigh, at little more than 12 months old, about 2,400 pounds!

The display of stallions at Auburn proved, as usual, the most attractive and admired point of the Fair: and truly they were meritorious as they were numerous. Here, again, we trace the immediate connection between competition and excellence, and the hope of immediate gain. The animal is itself locomotive, easily brought to the ground, and the owners have recourse to the Fair as the best theatre for exhibition and sale. Hence the great number to be usually met with, not only here, but on militia parade grounds and at political meetings. But where are the large, roomy, well-bred, fine forehanded, flat-legged, brood mares, that we should expect to find by dozens in the heart of a country so famous as "Western New-York" is, throughout the southern country, for the production of the most showy and the best harness nags? For these we have looked in vain, as indeed for match horses, such as bring, in the middle and southern States, from \$500 to \$1,000. They must be somewhere; but these Fairs seem not to bring them forth. An exhibition such as we might and had hoped for, of a *large number* of such superior mares and single colts and match horses, would be a most acceptable indication, not only of a *general* spirit of improvement, but of a readiness to take some little trouble and to be at some little expense to promote the patriotic objects of this great State association. But of this proof of a common zeal and a common readiness to coöperate in the public useful objects of these shows, there was no proof at all. The few mares and cattle of common breeds, except oxen, that were exhibited were of such character that we believe the Committee recommended the premiums to be withheld. A better show of mares would be met with at any county exhibition in Maryland or Virginia. So we return again, with pleasure, to remark that the display of stallions was superior to any we have seen in the State. It must be for some very odd and unimaginable purpose that a man wished to breed anything of the horse kind, who could not be suited here, whether in the heavy-bodied dray horse: the huge Cleveland bay; the thin-skinned, courageous racer; the hardy Canadian; the Mambrino trotting stock, or the short-jointed, close-knit, active Morgan horse. All were there, at his command. Of Hogs, we shall only remark that those, if any, who could not be satisfied with such as were there, can easily breed for themselves, even to a given number of white-feet, as pigeons are bred to a feather.

The display of fruit, especially of apples, served to corroborate the proofs, so everywhere abounding, of the suitableness of the soil and climate of New-York to the growth of that fruit, and to make it apparent that the apple crop is worthy of more general attention.

Finally, is it not to be apprehended that in most of the departments where excellence was exhibited, it was rather the fruit of individual exertion, stimulated by gainful purposes, and which would have been elicited under that influence independently of the State Society, or the fruit of a generous and most commendable disposition on the part of importers of cattle, which have been now so fre-

quently exhibited, and by which it was intended to show to the farmers of the country what they might accomplish in the same way if impelled by a real love of their vocation and a desire for excellence and distinction in the prosecution of it?

On the whole, unless the mass of the farmers can be prompted to enter more generally the lists of competition—unless we can show increased production by a more and more skillful preparation and application of manure, with other evidences of general improvement clearly traceable to a closer study of the principles of Agriculture—and as the fruit produced by these Annual Fairs, where, it may be feared, thousands come now to see, as to any other spectacle, rather than to contribute—may not the question begin to be put, whether we should not strike nearer to the root of the evil or deficiency we would cure, by applying a larger portion of the time and the means which are now applied to getting up spectacles, rather to the *dissemination of knowledge*—which, after all is power, and the basis on which all hopeful improvement must rest? General improvement in a great branch of national industry, implies influences deeply seated and widely diffused: it implies change and melioration in the system of education and the habits of thought; and that is not so easily wrought on men advanced in life, any more than espaliers can be made of old trees. It may well be questioned whether greater good would not be achieved by a premium, for instance, for the best essay on the art and principles of draining land—such an one as Mr. Thomas would write; or an essay from Downing on rural architecture; or Audubon on ornithology; or Doctor Darlington on botany; or Anderson on hemp; or Goldsborough on wheat; or Randall on barley; or Harris on entomology; or Seabrook on cotton; or Rost on sugar; or Franklin Minor on practical farming; or Wilder on horticulture—&c. and causing these to be read in every country school, and in every Farmers' Club. It may be doubted whether such dispositions of the funds at command would not lay the foundation of more good than all the premiums that ever were bestowed for large crops, or fat hogs, or cows with *three calves*! It is not with the spirit of cupidity in the old, but with the love of knowledge in the young, that we must deal. By particular ablution we may wash away the dust or insects from the branches of a tree; but if you would have it strike deep root and take firm hold of the ground—if you would invigorate its stem and give it fruitfulness and longevity, you must manure and cultivate *at the root*. So, if we would accomplish a radical and permanent and well-grounded reform in the great industrial interests of society, all effectual efforts to do so must be connected with the intellectual cultivation of the rising generations with reference to these particular interests; and although, as in the case of some accidental influence prejudicial to the fruitfulness of a particular crop, it may be removed, and the crop saved by expedients, yet it would be the height of folly and empiricism to rely on such expedients for the regular enjoyment of abundant harvests. The juggler may amuse the vulgar by his sleight-of-hand tricks, and fill their minds with amazement and his pockets with their loose change; but the philosopher and the man of sense knows all the while that nothing can break the regular and natural connection between cause and effect, and is eager to see what that connection is in the case before him. A glittering premium may cause any man to stuff his bullock into excessive obesity; but how much more useful to stimulate some man of science, by high and adequate rewards of profit or of honor, to analyze and explain, for common and universal benefit and information, the properties of the

soil on which the corn and the grass grow, and the nutritive properties, again, of the corn and the grass on which the bullock feeds, to the end that through all his operations the young farmer may proceed understandingly—else can he never proceed with the same pleasure or honor, or, with any thing like certainty, to adapt his means to his ends! Who does not know, as the result of experiments a thousand times repeated, what immense crops of corn can be made to grow on an acre—how much wool to grow on a sheep's back—how much milk a cow can be made to yield, and how much a hog be made to weigh? But how few understand thoroughly the principles upon which these results depend, and by what most economical means and processes they can be with certainty accomplished? Have we not, in a word, collected a sufficient mass of facts, and is it not time that we were drawing deductions from them, or, in other words, time that we were looking from effects to causes? Finally, the production of great crops and the exhibition of well-formed animals, and implements of the most perfect structure, are all highly worthy of encouragement—not to show that such things can be produced, but, as demonstrations of problems on the blackboard, to show, at the same time, *how* they have been done! Any fool can tell that if a hen sits three weeks on an egg it will produce a chicken; but it took science to ascertain the degree of temperature—about 100 of Fahrenheit—essential to incubation, and that artificial heat might be made to perform the office of the natural mother, and just as well. When shall we cease to appeal, as a stimulus to improvement, to the baser elements of our nature, and learn that no walk of life opens so many and such entertaining studies as those which lie in his path to charm the *cultivator of the soil*, and to make him establish his natural right to be accounted among the most learned, and, as he ought to be, of consequence, among the most useful and virtuous of mankind? How long shall we suffer all other classes to talk of and to treat us as fools or babies? Let our efforts and our means be applied to the *better education of the rising generation in the principles of Agriculture in all its branches*, and to providing well-paid and highly honored instructors and suitable books for all our schools, and for Farmers' Clubs. Thus would we lay a broad and solid basis out of which general and permanent improvement would grow up—improvement founded on pride in their profession, to which an understanding of its principles is always to be implied as essential.—We only say that the time may come when the question will arise, whether it is not better to give this other direction to a large share of our exertions, and to most of the means at our command, and even to the action of the Government, if the Government can ever be brought to act specially for this great interest as it does for others, that live, like horse-flies, on its blood.

We cannot draw these hasty remarks to a close without bearing our humble testimony to the patriotic efforts and designs of all concerned in projecting this exhibition, and to the assiduity and tact of the officers and assistants to whom was consigned the duty of superintending it. We regretted that, for more reasons than one, it was impossible for us to hear the Oration; but we shall read it with the greater attention, and with a pleasure for which we have ample security in the admitted and admired talents and eloquence of the orator.

Without the slightest wish to detract from him or from the obligation conferred by him on the Society, we will only add, that when agriculturists are brought by improved education in direct reference to their business, to a better knowledge of it and of their rights, knowing, they will "dare maintain them;" and will no longer consider themselves obliged to go annually to some member

of a "learned profession" to advocate the interests of their own, which thus, by implication, at least, they seem content shall be for ever considered as among the *unlearned*!

If, with some experience, and thirty years of zealous devotion to these subjects, we may be permitted to offer one suggestion in a friendly spirit, we would add that, instead of giving premiums to animals without merit, because they are without competitors, such animals should be stigmatized as unworthy of exhibition and of their race. Several such *priced* animals at this exhibition might be named. At all events, the *number of competitors* in all cases should be stated, along with the awards, as that would serve in some measure to explain that success does not always imply merit. The object of such Societies—especially State Societies—should be not so much to swell the number as to exemplify excellence in things exhibited. If proceedings are not conducted in this spirit of judgment and independence, the public will turn away in disgust from an institution so liable to be ill-directed or perverted.

PRICES CURRENT.

[Corrected, September 23, for the Monthly Journal of Agriculture.]

| | | | | | | | | | | |
|--|------------|-------|---|-------|--|-------------------|------|------|------|----|
| ASHES—Pots, 1st sort..... | 100 lb. | 3 75 | @ | — | Staves, White Oak, pipe, Φ M..... | 50 | — | @ | — | |
| Pearls, 1st sort, '46..... | | 4 37½ | @ | — | Staves, White Oak, bhd..... | 40 | — | @ | — | |
| BEE-SWAX—American Yellow.... | | 26½ | @ | 27 | Staves, White Oak, bbl..... | 30 | — | @ | — | |
| CANDLES—Mould, Tallow, Φ lb.... | | 9 | @ | 11 | Staves, Red Oak, bhd..... | 24 | — | @ | 26 | |
| Sperm, Eastern and City..... | | 26 | @ | 38 | Hoops..... | 25 | — | @ | 30 | |
| COTTON—From..... | Φ lb. | 73 | @ | — | Scantling, Pine, Eastern..... | — | — | @ | 15 | |
| COTTON BAGGING—American.... | | 10½ | @ | 13 | Scantling, Oak..... | 30 | — | @ | 35 | |
| CORDAGE—American..... | Φ lb. | 11 | @ | 12 | Timber, Oak..... | Φ cubic foot | — | — | 33 | |
| DOMESTIC GOODS—Shirtings, Φ y. | | 5 | @ | 11 | Timber, White Pine..... | — | — | @ | 15 | |
| Sheetings..... | | 61 | @ | 15 | Timber, Georgia Yellow Pine.... | — | — | @ | 22 | |
| FEATHERS—American, live..... | | 25 | @ | 30 | Shingles, 18 in..... | Φ bunch | 1 75 | @ | 2 | |
| FLAX—American..... | | 63½ | @ | 71 | Shingles, Cedar, 3 feet, 1st quality. | 25 | — | @ | — | |
| FLOUR & MEAL—Genesee, Φ bbl. | | 4 87½ | @ | 4 93½ | Shingles, Cedar, 3 feet, 2d quality. | 22 | — | @ | 23 | |
| Troy..... | | 4 87½ | @ | 4 93½ | Shingles, Cedar, 2 feet, 1st quality. | 17 | — | @ | 18 | |
| Michigan..... | | 4 87½ | @ | — | Shingles, Cedar, 2 feet, 2d quality. | 15 | — | @ | 16 | |
| Ohio, Flat Hoop..... | | 4 87½ | @ | — | Shingles, Cypress, 2 feet..... | 13 | — | @ | 14 | |
| Ohio, Round Hoop..... | | 4 75 | @ | — | Shingles, Company..... | — | — | @ | 38 | |
| Ohio, via New-Orleans..... | | — | @ | — | MUSTARD—American..... | 16 | — | @ | 31 | |
| Pennsylvania..... | | — | @ | — | NAILS—Wrought, 6d to 20d... Φ lb. | 10 | — | @ | 12½ | |
| Brandywine..... | | 5 | @ | — | Cut 4d to 40d..... | 4 | — | @ | 4½ | |
| Georgetown..... | | 4 75 | @ | 4 87½ | PLASTER PARIS— Φ ton..... | 2 25 | @ | 2 50 | | |
| Baltimore City Mills..... | | — | @ | — | PROVISIONS—Beef, Mess, Φ bbl.... | 6 75 | @ | 7 | — | |
| Richmond City Mills..... | | 6 | — | @ | 6 25 | Beef, Prime..... | 5 50 | @ | 6 | |
| Richmond Country..... | | 4 75 | @ | 4 87½ | Pork, Mess, Ohio..... | 9 75 | @ | — | — | |
| Alexandria, Petersburg, &c..... | | 4 75 | @ | 4 87½ | Pork, Prime, Ohio..... | — | — | @ | 8 25 | |
| Rye Flour..... | | 3 50 | @ | — | Lard, Ohio..... | Φ lb. | 6½ | @ | 7½ | |
| Corn Meal, Jersey and Brand..... | | 3 50 | @ | — | Hams, Pickled..... | — | — | @ | 5 | |
| Corn Meal, Brandywine....., bhd. | | 15 | — | @ | Shoulders, Pickled..... | — | — | @ | 4 | |
| GRAIN—Wheat, White..... Φ bush. | | 1 | — | @ | Sides, Pickled..... | — | — | @ | — | |
| Wheat, Red.....new | | 90 | @ | 1 | Beef, Smoked..... | Φ lb. | 7½ | @ | 8 | |
| Rye, Northern..... | | 75 | @ | — | Butter, Orange County..... | 15 | — | @ | 16 | |
| Corn, Jersey and North.....(meas.) | | 73 | @ | 75 | Butter, Western Dairy,new..... | 12½ | @ | 14 | | |
| Corn, Southern.....(measure) | | — | @ | — | Butter, Grease..... | 6½ | @ | 7 | | |
| Corn, Southern.....(weight) | | — | @ | — | Cheese, in casks and boxes..... | 6 | — | @ | 7 | |
| Oats, Northern..... | | 34 | @ | 35 | SEEDS—Clover..... Φ lb. | 6 | — | @ | 7½ | |
| Oats, Southern..... | | — | @ | — | Timothy..... | Φ tierce | 11 | — | @ | 15 |
| HAY—North River in bales, Φ 100 lb. | | 35 | @ | 45 | Flax, Rough..... | 8 | 50 | @ | 9 | |
| HEMP—American, dew-rotted... ton | | 75 | — | @ | SOAP—N. York, Brown..... Φ lb. | — | — | @ | 6 | |
| " " water-rotted..... | | 170 | — | @ | TALLOW—American Rendered.... | 7 | — | @ | 7½ | |
| HOPS—1st sort, 1845..... | | 14 | @ | 15 | TOBACCO—Virginia..... Φ lb. | 21 | — | @ | 6 | |
| IRON—American Pig, No 1..... | | 32 50 | @ | 35 | North Carolina..... | 21 | — | @ | 5 | |
| " " Common..... | | 22 50 | @ | 25 | Kentucky and Missouri..... | 24 | — | @ | 7 | |
| LIME—Thomaston..... Φ bbl. | | 75 | @ | — | WOOL—Am. Saxony, Fleeced... Φ lb. | 32 | @ | 34 | | |
| LUMBER—Boards, N.E., Φ M. ft. chr. | | 30 | — | @ | American Full Blood Merino.... | 27 | @ | 28 | | |
| Boards, Eastern Pine..... | | 11 | @ | 13 | American ½ and ¼ Merino..... | 22 | @ | 25 | | |
| Boards, Albany Pine..... Φ pce. | | 10 | @ | 18 | American Native and ¼ Merino.... | 20 | @ | 21 | | |
| Plank, Georgia Pine..... Φ M. ft. | | 27 | — | @ | Superfine, Pulled..... | 24 | @ | 25 | | |

MONTHLY JOURNAL OF AGRICULTURE.

VOL. II.

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NO. 5.

EXPLANATION OF THE PLATES.

The first Plate, accompanying this number, belongs to the MONTHLY JOURNAL OF AGRICULTURE, and is designed to present a view of THE STATE FAIR, held at Auburn, N. Y., September, 1846.

The second Plate belongs to THE FARMERS' LIBRARY, and will come in, at its proper place, in the "BOOK OF THE FARM." It is the portrait of a black DRAUGHT-STALLION, of the true Clydesdale breed. He gained the first prize at the Highland and Agricultural Society's Show at Glasgow, Scotland, and obtained premiums elsewhere. He is represented as being fully 17 hands; and, though otherwise a large animal, being 8 feet 7 inches in length, yet of high and uncommonly light action.

[Mr. Corning, at Albany, and others, have imported fine specimens of this breed. Their stock must prove of great value in Pennsylvania, and wherever it is necessary to throw great weight into the collar, for heavy draught.—*Ed. Farm. Lib.*]

The third Plate represents an elevation of the EAST-LOTHIAN PLOW, and belongs to THE FARMERS' LIBRARY, and will take its place in the "Book of the Farm," where it will be fully explained in all its parts.

[The beam and handles or "stilt" of these plows are almost invariably now made of malleable iron, and it is said there is no end to their endurance.—*Ed. Farm. Lib.*]

AGRICULTURE IN MASSACHUSETTS.

WE do not know how the space it fills could be better occupied than by what follows on the subject of legislative provision for Agriculture in the sedate and sober old Commonwealth of Massachusetts. Well has it been written by Benjamin P. Johnson, Corresponding Secretary of the New-York State Agricultural Society—"Look at Massachusetts, that noble Commonwealth! Look at her Agricultural Associations, sustained and patronized by the Government, and witness the results of their efforts! The Empire State is indebted to Massachusetts for almost every superior implement of husbandry; and her agricultural products, upon a soil far less favorable for cultivation than ours, are such as to require the most improved and efficient system of husbandry to equal her."

As we rejoice in the belief that the landholders of the United States are at last waking up to a sense of their rights, as well as of their deficiencies, and that they are beginning, in most of the States, to form the determination to take their own affairs in their own hands, we are glad of the opportunity to assist them in maturing measures for the promotion of Agriculture—such measures as have been adopted, and attended with the best results, in a State whose policy and proceedings have been thus characterized by Mr. Johnson, late President of the New-York State Agricultural Society.

Attempts, always well meant, however sometimes abortive, have been made, and we trust will soon be made again, with better success, in Virginia and other

(433).....13

States, to give practical effect to the spirit of agricultural improvement—a spirit which, we are sure, is elsewhere “not dead, but sleepeth.”

What invaluable institutions might be established, and arrangements made, for the diffusion of agricultural knowledge in that State, by means of *her share* of the sales of the lands which she surrendered for the benefit of the country!—But our purpose is not to enter into any discussion as to where the means are to be found. “Where there is a will, there is a way.” And when landholders become satisfied that a very small share of the common treasure, appropriated for the benefit of Agriculture, would as well comport with, and promote, the “general welfare,” as a million a week for war, they will not be long, or ought not to be, in finding out *how to come at it*. In the mean time, in the following “ADVERTISEMENT” to the first “Abstract from the returns of Agricultural Societies of the State” of Massachusetts, the friends of similar measures in other States may see what she has done, and will not, we yope, be long in *acting up* to the conviction that they should “go and do so likewise.”

Some passages of this Advertisement have been omitted, as not being material to the history and understanding of the proceedings of that Commonwealth, to the extent that a knowledge of these may be useful as a model for those in other States whose patriotism may lead them to get up measures analogous, in spirit at least, if not in detail.

ADVERTISEMENT.

THE Massachusetts Society for promoting Agriculture, the first association of the kind in the Commonwealth or in America, was founded in the year 1792, and incorporated by an Act of the General Court of that year.

Obtaining means of operation by an annual assessment upon its members, and by a subscription amounting to four thousand dollars—a liberal sum for that period—it proceeded to invite public attention to its objects, to distribute premiums for agricultural improvements, and to import valuable animals with a view to the introduction of better breeds of cattle and other stock. In 1797, it instituted the Agricultural Journal, a publication continued more than thirty years. It took measures for the institution of County Societies, and for the erection of a Hall, at Brighton, in Middlesex, for the exhibition of domestic and other manufactures. It contributed to the establishment of the Professorship of Natural History, and of the Botanical Garden, in the University of Cambridge. In 1813, began a series of public addresses, pronounced successively at its

autumnal celebrations, by John Lowell, Josiah Quincy, Richard Sullivan, Henry Colman, Timothy Pickering, John C. Gray, James Richardson, Edward Everett, Henry A. S. Dearborn, and perhaps others. The delivery and publication of addresses from such sources exerted an important influence in attracting attention and favor to the objects of the Association.

The example was followed by other institutions for the same purpose. The Commonwealth extended to them its patronage; and the policy has been continued, and has grown in favor, to the present time. An Act of 1819 (chapter 114) appropriated two hundred dollars annually, from the Commonwealth's treasury, to every Society which should raise the sum of one thousand dollars for the promotion of Agriculture, and in like proportion for any greater sum, not exceeding three thousand dollars. The following Table exhibits a list of the Agricultural Societies now in existence, with the dates of their incorporation respectively, the dates of their first grant of money, and the aggregate amounts received from the Commonwealth:

| | Date of incorporation. | Date of first payment. | Total amount received. |
|--|------------------------|------------------------|------------------------|
| Massachusetts Society for promoting Agriculture..... | March 7, 1792. | Oct. 29, 1817. | \$18,300 00 |
| Western Society of Middlesex Husbandmen..... | Feb. 28, 1803. | } Jan. 12, 1820. | 14,340 80 |
| Name changed to Society of Middlesex Husbandmen and Manufacturers..... | Jan. 24, 1820. | | |
| Berkshire Agricultural Society*..... | Feb. 25, 1811. | Oct. 29, 1817. | 13,736 60 |
| Hampshire, Franklin and Hampden Agricultural Societies... | Feb. 19, 1818. | Oct. 13, 1819. | 16,200 00 |
| Worcester Agricultural Society..... | Feb. 23, 1818. | Jan. 12, 1820. | 16,200 00 |
| Essex Agricultural Society..... | June 12, 1818. | Jan. 12, 1820. | 15,140 40 |
| Agricultural Society in the County of Plymouth..... | June 11, 1819. | Oct. 27, 1820. | 12,884 49 |
| Eristol County Agricultural Society..... | June 14, 1823. | Nov. 9, 1824. | 7,346 32 |
| Agricultural Society of the County of Hampden..... | March 5, 1844. | Nov. 21, 1844. | 1,200 00 |
| Barnstable County Agricultural Society..... | March 15, 1844. | Feb. 11, 1845. | 468 00 |
| | | | \$115,816 61 |

* The Cattle-Show and Fair of this Society, at Pittsfield, in 1814, were the first held in this country.

The following Societies have also been incorporated at the dates annexed, but are not known to have gone into operation, viz :

Farmers' AssociationFeb. 13, 1821.
Hampshire Agricultural Society, June 11, 1814.
Suffolk Agricultural Society.....April 10, 1839.

In 1837, Resolves (chap. 67) were passed of the following tenor, viz :

"*Resolved*, That His Excellency the Governor, by and with the advice of the Council, is hereby authorized and requested to appoint some suitable and competent person, whose duty it shall be, under the direction of His Excellency the Governor, to make an Agricultural Survey of the Commonwealth, collect accurate information of the state and condition of its Agriculture and every subject connected with it, point out the means of improvement, and make a detailed report thereof, with as much exactness as circumstances will admit.

"*Resolved*, That a summary of such survey and examination shall be furnished to His Excellency the Governor every six months, until the whole shall be completed, and at such other times as shall be required, to be published in such way and manner as he, with the advice of the Council, shall deem to be expedient and useful; and he is authorized to draw his warrants, from time to time, upon the Treasurer, for such sums as may be necessary to defray the expenses of said survey, and to enable the person, so appointed to proceed in the execution of the duties that shall be required of him; and to pay the same to him, not exceeding the sum of two thousand five hundred dollars per annum."

Mr. Henry Colman, the Agricultural Surveyor appointed under this authority, published four Reports, which had a wide circulation in the country, and attracted favorable attention abroad. The Resolves were repealed, and the office discontinued, by a Resolve of 1841 (chap. 14).

The laws now in force, relating to the subject, are the following, viz :

[Revised Statutes, Chap. 42.]

OF AGRICULTURAL CORPORATIONS.

SECTION 1. Every incorporated Agricultural Society, which shall have raised or may hereafter raise, by contribution of individuals, and put out at interest, on public or private security, the sum of one thousand dollars, as a capital stock appropriated for the uses of such Society, shall be entitled to receive, in the month of October, annually, out of the treasury of the Commonwealth, the sum of two hundred dollars, and in that proportion annually for any greater sum so contributed and put at interest, as a capital stock; *provided*, that no Agricultural Society shall receive from the treasury more than six hundred dollars in any one year.

§ 2. Any Agricultural Society, formed within any county or counties wherein there is no incorporated Society for the same purpose, and which shall raise and put out at interest, as a capital stock, not less than one thousand dollars, for the uses of such Society, shall receive, on application to the Legislature, an act of incorporation, in the usual form, and with the customary rights and powers; and, after such incorporation, the Society shall have all the privileges secured to other Agricultural Societies, on com-

plying with the terms and provisions herein contained; *provided*, that no Agricultural Society shall have the benefits of this section unless the same be formed in a county, or in an association of counties, including a population of not less than twenty-five thousand inhabitants.

§ 3. Every Agricultural Society which shall claim the said allowance out of the public treasury shall, in the month of October, annually, file in the office of the Secretary of State a certificate, signed by the President and Treasurer of such Society, specifying under oath the sum actually contributed, and put at interest, and then held by them well secured as a capital stock; and a warrant shall be drawn for the sum to which such Society may be entitled.

§ 4. Every Agricultural Society which shall receive the said allowance from the public treasury shall offer annually, by way of premiums, or shall apply otherwise, at their discretion, for the encouragement or improvement of Agriculture or manufactures, a sum not less than the amount annually received, as aforesaid, out of the public treasury; and they shall also transmit to the office of the Secretary, in the month of January, annually, a statement of their proceedings in relation to the expenditure of such moneys, specifying the nature of the encouragement proposed by the Society, and the objects for which their premiums have been offered, and to whom they were awarded; and shall accompany the same with such general observations, concerning the state of Agriculture and manufactures in the State, as they may deem important or useful.

§ 5. All moneys offered for premiums, which shall not be awarded or paid, shall be put out at interest, and added to the capital stock of each Agricultural Society.

§ 6. Every Agricultural Society which shall receive the said public allowance shall offer, annually, such premiums and encouragement for the raising and preserving of oaks, and other forest trees, as to them shall seem proper, and best adapted to perpetuate, within the State, an adequate supply of ship timber.

§ 7. The foregoing provisions shall not extend to any Agricultural Society which has been, or hereafter may be, incorporated for any territory less than a county.

§ 8. All incorporated Agricultural Societies may, by their officers, define and fix bounds of sufficient extent for the erection of their cattle-pens and yards, and for convenient passage-ways to and about the same, on the days of their cattle-shows and exhibitions, and also for their plowing-matches, and trials of working oxen; within which bounds no person shall be permitted to enter or pass, unless in conformity with the regulations of the officers of said Societies, respectively.

§ 9. If any person shall, contrary to the regulations of the said officers, and after notice thereof, enter or pass within the bounds so fixed, he shall forfeit a sum not exceeding five dollars, to be recovered in an action on the case, for the use of the Society, by the Treasurer thereof.

§ 10. The foregoing provisions shall not authorize such Societies to occupy, or include within the bounds which they shall fix for the purposes aforesaid, the land of any person, without his consent, nor to occupy any turnpike or public highway, in such a manner as to obstruct the public travel.

§ 11. The officers of every such Society may appoint a sufficient number of suitable persons,

inhabitants of the county, to act as marshals, at cattle-shows and exhibitions; and they shall have and exercise all the powers of constables, in relation to the preservation of the public peace, and the service and execution of criminal process, within the towns, respectively, where such shows and exhibitions may be held; and any such criminal process may be directed to them accordingly; and they shall exercise their said office from twelve o'clock at noon of the day preceding the commencement of such shows and exhibitions, until twelve o'clock at noon of the day succeeding the termination thereof, and no longer.

[Act of Feb. 25, 1842, Chap. 31.]

AN ACT RELATING TO RETURNS FROM AGRICULTURAL SOCIETIES.

SECTION 1. No Agricultural Society which, on the first day of April, in the year one thousand eight hundred and forty-two, shall have neglected to make returns to the Secretary of the Commonwealth, as required by the first and fourth sections of the forty-second chapter of the Revised Statutes, shall be entitled to receive the allowance from the Commonwealth, as therein provided.

§ 2. No Agricultural Society which shall not have made returns to the office of the Secretary of the Commonwealth within the month of January, in the year one thousand eight hundred and forty-three, and within the month of January in each succeeding year thereafter, as required by the sections of the Revised Statutes mentioned in the preceding section, shall be entitled to receive any aid from the Commonwealth.

[Act of March 7, 1845, Chap. 111.]

AN ACT REQUIRING ADDITIONAL RETURNS FROM AGRICULTURAL SOCIETIES.

SECTION 1.* Every Agricultural Society entitled to receive money from the treasury of the Commonwealth shall, in addition to the return of premiums paid, now required to be made in the month of January, make full returns of their doings into the office of the Secretary of State, on or before the first day of January, in every year—embracing all reports of committees, and all statements of experiments and cultivation, deemed, by the officers of the several Societies, worthy of publication.

§ 2. The Secretary of each Society, whether his return be in printed or manuscript form, shall mark, in a manner to be easily distinguished, those passages in the several reports and statements which he regards as most worthy of public notice, study and application.

§ 3. The Secretary of State is directed to transmit a copy of this Act to the Secretary of every incorporated Agricultural Society in the Commonwealth, on or before the first day of 4th September, 1845.

§ 4. The Secretary of State is hereby direct-

ed to cause as full an abstract from said returns to be made and published in each year, for distribution, as in his judgment will prove useful.

§ 5. Any Agricultural Society which shall neglect, in any year, to comply with the provisions of this act, shall forfeit its claim to bounty from the Commonwealth the succeeding year.

§ 6. Any parts of passed acts inconsistent with the provisions of this are hereby repealed.

The present publication is the first which has taken place under the authority of the Act of 1845. The Societies have all complied with its provisions so far as to furnish a summary of their proceedings for the year; but more than half of them have neglected that part of the law which requires them to mark those passages deemed by their Secretaries worthy of the public notice, study and application. All the returns were made within the legal time, with the exception of that of the Society in Bristol.

Of these returns, the most complete is that of the Essex Agricultural Society, which, from its long experience in publishing annually a volume of its transactions, has attained to a high rank in the fullness of its reports and the exactness of its statements. The Worcester and the Plymouth Societies' returns are also highly satisfactory. The Hampden Society, considering its youth, (it having been established but two years,) has made a very creditable return of its doings. The officers of all the Societies have appeared desirous of furthering the design of the Legislature in enacting the law of last year, by making as full a return as the character of their proceedings admits.

The object of the law obviously is, to bring together the practical knowledge of our best farmers, horticulturists and manufacturers, in their respective branches of labor. In order to secure a valuable volume of this description, the Legislature of New-York, in a law similar to our own on this subject, requires of all Agricultural Societies receiving the bounty of the State, that "before any premium shall be delivered, the person claiming the same, or to whom the same may be awarded, shall deliver in writing, to their respective officers, as accurate a description of the process in preparing the soils, including the quantity and quality of the manure applied, and in raising the crop or feeding the animal, as may be; and also of the expense and product of the crop, or of the increase in value of the animals, with the view of showing accurately the profit of cultivating the crop or feeding or fattening the animal." Our statute establishing Agricultural Societies and granting to them pecuniary aid, makes no provision for the collecting of information on these points. Perhaps it was thought that the Trustees of these Societies would secure the accomplishment of the object, so far as it might be deemed desirable, by regulations of their own. And we find, in fact, that several of the Societies, at least, do require accurate statements of this description from claimants

* It has been made a question whether this section provides for an *additional return*, into the Secretary's office, to that required in the fourth section of chapter 42 of the Revised Statutes, or whether the incorporation, into the old form of return, of the information specified in the new, is a sufficient compliance with the law. The former appears to be the correct interpretation of the recent statute. The return under the old law must be made in the month of January, and may be made on any day of that month.—The return under the new law may be made at any time before January, but cannot be made later than the first day of that month.

of their premiums. But the misfortune is, that these rules are imperfectly or not at all complied with. The returns made to this office, with some exceptions, are deficient in accurate details of the modes of cultivation, of keeping stock, of expenses, and of other important incidents. These details would acquaint farmers and others with the precise manner in which the valuable results recorded can be again obtained, and would furnish the means by which a greater or more general progress would be made in practical Agriculture.

The course adopted by our Societies is, in the first place, to publish a list of premiums for excellence in certain agricultural and mechanical productions. Committees are then appointed to decide upon the claims of competitors. Their awards are made and sanctioned by the Societies, and the names of the successful claimants of premiums are published in the newspapers. In some cases, the written statements required by the Societies from the claimants, accompany the Reports of the Committees; but more frequently there are none made, and the Reports are meager from the deficiency of materials from which to prepare them. It seems important, as well for the interests of the Societies as for the full accomplishment of the good results contemplated by the Act of 1845, that all our Agricultural Societies should not only establish rules requiring these statements, but should enjoin and require a rigid adherence to the rules, as a necessary condition of awarding their premiums. By pursuing this course from year to year, our farmers would soon acquire habits of accurate observation and exact recording of processes and results. From the documents thus produced, the whole agricultural community would learn what is most valuable in farming and most worthy of imitation; and would learn, too, how to imitate it. Farmers would thus be the teachers and the taught. Throughout the Commonwealth, they would form a class for mutual improvement. They would not and could not complain of such instructors as mere book-farmers, but would strive themselves so to excel, that their own course of

husbandry should be submitted in print to the imitation of others.

Another source of valuable information for the pages of the annual volume, is supplied by the public Addresses usually delivered on the days of holding the exhibitions of the Societies. These Addresses are generally prepared with care by competent individuals; and, besides aiding the cause of Agriculture by impressing on the farmers assembled from different parts of the same county, the importance and dignity of their calling, usually convey a large amount of sound and judicious hints as to the practical details of the pursuit. These Addresses are frequently given to the public through the press—a practice which doubtless exerts a wholesome influence in causing them to be prepared not merely for rhetorical effect, but for profitable perusal in print.

In the preparation of the volume, as a first experiment in this Commonwealth, it was thought judicious to study brevity; and a leading principle in making selections was to present whatever was peculiar to any Society, so as to afford a variety of information to the reader, and extend the knowledge of local experiments. On the other hand, in some particulars, it is meager from want of materials. It might have been advantageously enlarged, if all the returns had been equally rich in their specimens of reports of Committees, and of statements of successful competitors for premiums.

In the preparation of the Abstract, I have availed myself of the well known judgment and talent of Hon. Allen W. Dodge, an experienced farmer of Hamilton, in the county of Essex. * * * * *

In the return of the Massachusetts Society the statement of its recent valuable importation of foreign stock is not accompanied by any description of the animals. Believing that the subject would attract the particular attention of farmers, I have placed in the Appendix a full description, which appeared in the columns of the "New-England Farmer," after the bulk of the volume had been printed.

J. G. P.

Secretary's Office, March 17, 1846.

We shall avail ourselves of these abstracts, for practical uses, when room and occasion present themselves. A willing spirit and a clear perception are visible in the combined brevity and lucidness of this Preface to the first performance of Mr. PALFREY, the accomplished Secretary of the Commonwealth, under the act of the Legislature which devolves on him the duty of making these abstracts.

A READY RULE FOR FARMERS.—We have been frequently asked to explain the difference between the price of wheat per quarter and per barrel. The simple rule by which every man can ascertain this for himself is this: Multiply the price per quarter by 7, and divide by 12; the result will give the amount per barrel. Thus, 56s. per quarter multiplied by 7, and divided by 12, gives 32s. 8d. per barrel.

AGRICULTURAL FAIR

OF THE WORCESTER COUNTY, MASS. AGRICULTURAL SOCIETY.

With some Notice of the Men and Things.

THERE is among New-England men an admirable spirit of *persistence* in what they undertake to do, which it would be well if our countrymen generally could imitate. Deliberate in undertaking, when they do resolve there is no looking back. If they are slow, like their own noble oxen, like them also they are steady to the draught, and what they do they do well. If they are inventive in genius, they are not impulsive in action. If wary in making engagements, they are faithful in fulfilling them. In every walk of New-England life, in every phase of New-England society, you observe these characteristics.

Invited by this ancient and most respectable branch of the oldest Agricultural Society of the Union, to pronounce an Address on Agriculture at their late Fair at Worcester, we did not feel at liberty to decline the honor; but, deeming its performance the least important among the occurrences of the occasion, we proceed to notice some others, such as would naturally strike the attention of a stranger and a southern man, and the relation whereof may have some interest for readers generally.

Steamers from New-York to Norwich, Ct., and thence by railroad, offer a popular and easy conveyance to Boston; but the traveler who can stop at Norwich, and take the afternoon train eastward, may be well repaid for a few hours' delay in a view of the town, and its environs and manufactories. This was the theatre of the Last of the Mohicans—here repose the bones of UNCAS. The only manufactories which we had time to visit, under the polite guidance of Mr. Goddard, were designed for very opposite purposes. One was Mr. THURBER's, for manufacturing *revolving pistols*; the other, Mr. WATERS's, where the models are preparing for a contrivance of extraordinary ingenuity and power for *making scythes*. Mr. Thurber exhibits also a curious *writing-machine*. It looks, for all the world, like a piano-forte. On the keys are marked the letters of the alphabet; the paper is fixed, like a picture in a frame, sitting before the player; near the paper is a small, sharp-pointed, brass tube or bill, like a bird's bill. On striking a particular letter, this bill of the bird, as we call it, pecks at the paper moving along, to make one letter in a line with another—exactly as the reader, when a boy, if not since, has seen a red-headed woodpecker “tapping a hollow beech tree.” By this machinery the tongue is protruded from the bill, and writes, or rather *prints* the letters “as fast as a horse can trot.” Of the pistols we say nothing, because we hope the day is coming when nations will give up shooting and stabbing each other, or give up talking about Christianity and civilization, and sending missionaries to convert the heathen nations, who never do anything worse, *cannibals only excepted*.

Of Mr. Walter, and his invention for *scythe making*, we hold it to be a sort of duty, and that in “*our line*,” to make more particular mention.

Mr. W. is decidedly of a *scythe making* family, for that honorable and useful handicraft was the business of his own father and grandfather. His mother's fath-

er, and some of his brothers and cousins have all been scythe makers. But Mr. Henry Waters's genius takes a wider sweep. They say he can write poetry, set it to music, and sing it afterward. But what is more important, and ought to render him a favorite with the ladies—a high privilege, to be coveted by every man of common sensibility—he it is, the identical man, who invented the machine which carried the art of *papering pins*, at a single move, from the tame, tedious operation of sticking into the paper, pin by pin, with the hand, to this wonderful result.

With his machine the pins are thrown into a box, all in a mass, head and tail, and, *presto!* they come out at the other end, already stuck into papers, just as the ladies buy them—three sets of papers; not three rows on one paper, but three different papers rolling out of the machine at one time, *all prepared for being cut into lengths and folded up for sale.*

When this machine was finished, and not before, Mr. Waters set about his scythe making machine, on which he has been at work for two years, until he is now about to put it into immediate operation at Troy, on account of Messrs. Draper, Brown and Chadsey, at the “State dam,” as it requires a strong power to drive it. Mr. W. is in one respect unlike the generality of inventors. When he commences one thing, he perseveres with that, and that only, until it is completed.

This great desideratum in the manufacture of one of the most important implements in Agriculture seems to consist in this: In the last thirty years there seems to have been but one essential improvement in scythe-making. This was made twenty-five years ago, and has not been so essential as to have been adopted by all manufacturers even to this day. So that scythes are and have been (as far as the forging is concerned) manufactured mostly by *tilt* and *hand* hammers, involving the expense of much labor and fuel, as they are now *heated some ten or twelve times.*

Now, in place of all this heating and hammering, Mr. Waters proposes to introduce a set of machinery (models of which he showed us), consisting of some six massive machines of different devices, and most of them novel in their leading principles. The first of these machines will take the iron in the bar when heated, divide and cut it, and introduce the steel, forming the moulds.

These moulds will then be placed in a furnace, and there be brought to a proper welding heat, when they will be introduced into the welding machine; after which, and at the same heat, they will be introduced from one machine to another, until the scythe is forged complete, ready for tempering—thus saving not less than 80 per cent. of fuel and labor, and some 60 per cent. of power: besides, it is expected that the article will be much more uniform in its temper, as it is sure to be in its form—consequently a lighter and stiffer article can be produced.

The first set of machinery is to go into operation at Troy, N. Y., on account of Messrs. Draper, Brown and Chadsey, of that place—now well known in the manufacture of scythes—some time about July next. Mr. W. has favored us with an invitation to be present to witness the operation thereof, when (or he is much mistaken) it will produce a better article than has ever before been produced, and at the rate of *eight or ten dozen scythes per hour.*

As it is only by some reduction of the price that this distinguished inventor may expect to take the wind out of the sails of the present manufacturers, the farmers must be benefited in proportion. It's an ill wind that blows nobody any good, and we rejoice in such as bring “success to the farmer.” We have ac-

cepted Mr. W.'s invitation: and, when his promises are realized, we shall wait impatiently to see what will be the recompense, in the way of honor or reward conferred on him by Congress!

While on the subject of agricultural implements and machinery—all improvements in which we shall be glad in any way to illustrate and bring into notice, when aided by their inventors—reference may here be made to the great agricultural implement and machine manufactory of Messrs. RUGGLES, NOURSE & MASON, where both iron and wood seem to be as easily wrought upon, and made to assume any desirable form or shape, as if they were but a piece of cypress shingle, under the action of a sharp knife, in the hands of a tavern loafer, in a certain latitude that shall be nameless.

This establishment at Worcester employs about fifty hands, and, being the nucleus of their larger one in Boston, may be considered the largest in this country and must constitute one of the important resources of a town which, in a few years, has quadrupled its population—numbering now about 12,000, and presenting, from the different points about its environs, various and complete views of it—all wearing an aspect of freshness and cleanliness, as if every dwelling had been finished off, painted and occupied within the past week.

It would be deemed out of place here to speak of its hospitality and social advantages and enjoyments; but we shall have said *multum in parvo*, when we note the fact that Worcester is the residence, and, we believe, the native county, of Governor LINCOLN and of "HONEST JOHN DAVIS"! What a compliment to the man whose life and actions win for him such a title!—or, shall we say, what a commentary on the times—as if it took again a lantern at mid-day to find, as in Athens, *one honest man*!

We might, if it were not out of place, dwell, too, on other institutions besides that of this old Agricultural Society—such as the Catholic College, occupying a most commanding and beautiful site in the vicinity; and on the Lunatic Asylum, unrivaled, as we suppose in the Union, for spaciousness of accommodation and appropriateness of locality and scenery—wanting only, could that be had, an expanse of water prospect in the distance, but as admirable as it is celebrated for the persuasive gentleness and humane philosophy of its management and administration.* On none of such things, however interesting to every considerate mind and to humanity, are we permitted to expatiate.

For the Fair itself, the day was as fine as ever came from the heavens—a little warm for the season, but tempered with the hazy mellowness of the Indian summer, that made it delightful. As to the number of people in Worcester on the 8th of October, these might be computed, if one knew the *number of inhabitants in the county*; for surely the county must have been depopulated on this occasion. The oldest members of the Society said they had never seen so many in attendance as at this *Twenty-Eighth Cattle-Show*! proving, as we have already said, that when these Yankees do take hold, they mean to keep going ahead.—You don't see them kicking in harness, sometimes snapping the traces, by fitful efforts, and then rearing up and falling backward. One may judge how perfectly all their rules are digested, and how exactly they are carried out, when it is considered that all these men and animals are brought together—every animal thoroughly examined—the claims for premiums carefully inspected—the plowing match and hauling match conducted with the utmost deliberation, by practical

* We had not then visited the Asylum at Hartford, Connecticut, of which we may speak, and that, too, in connection with agricultural and rural life, in an early number.

farmers, all of whom do now, or have taken a hand at the same work, and well know, therefore, how to tell "the true from the sham,"—all this is completed, and premiums awarded, in one day. Strict compliance with well-considered rules is invariably enforced. No plausibility of excuse is allowed to avail—no degree of excellence in the animal, or article—no consideration of rank or influence of the owner, delinquent in a compliance with the printed rules of the Society, is permitted to justify a departure from them in administering the affairs of this most respectable and valuable institution; of which it is not only a matter of sheer justice, but even of duty, on the part of this Journal, to note that Gov. LINCOLN was originally the most active of its founders, and is now the official head and animating spirit. How encouraging should it be to all young farmers of the Commonwealth and of the country, to see this veteran in the cause of agricultural improvement still entering into all the proceedings of the occasion, not as in the reluctant performance of an official duty, which, with its novelty, has lost its interest, but with all the cheerfulness and buoyancy of the most youthful member—evinced at the same time, by all his remarks and commentaries, explanatory of the Society's rules, and of every report and proceeding under them, that his heart enters cordially into the spirit and purposes of the Society, with a perfect familiarity with its regulations, and the reasons on which they were based. Nor was all this any the less apparent in the tone of pleasantry, and sallies of wit, that distinguished his presidency over the dinner table.

Where *such spirits* preside, none other will ever be wanting—as none other were here provided—to give life and animation to these annual festivals of the sun-burnt, hard-fisted yeomanry of old Worcester. If it could not be sung that "the wine doth sparkle on the board," it may be truly said that good feeling and pleasantry, and lively and patriotic speeches and sentiments, sparkled none the less around it.

We have already spoken of a *scythe-making* family in Connecticut. Here in Worcester, too, some things seem to "run in families." Among the plows and plowmen, it was a strange coincidence that the winners of the first three prizes should bear the name of CARPENTER! all at the handles of *their own plows and teams*. And here, again, in assisting and pushing forward this old model Society, it was *Lincoln* this, and *Lincoln* that, and *Lincoln* the other—*Lincoln* Treasurer, *Lincoln* Secretary, *Lincoln* President—all offices of labor and of love, without fee or reward; from all which we may infer that there they stand, ready to be *linked on* to any duty that may be assigned them for advancement of the agricultural interest. Nay more: at the very moment that we are taking liberties with a name linked by so many associations to useful works and patriotic causes, the eye is caught by an advertisement of "1,000 loads of *pond mud*, of excellent quality, for sale—nearly equal to barn-yard manure—at the pond on the *Lincoln* estate. Apply at 148 Main-street." Thus may hints and instruction be found in almost everything; for while, in some parts of the country, "barn-yard manure," when accumulated, is itself deemed an incumbrance, here the *pond mud* of the *Lincoln* estate is offered *for sale*!

For reasons that will readily occur to every reader, and that need not be reiterated here, we shall forbear to give the list of premiums, and other *details* of this exhibition. Enough has been said in stating that, at this 28th of their regular annual exhibitions, there was a larger concourse of people and more interest evinced than on any former occasion.

Here, among these men who know that out of the ground they are to get their

living, this is *their* festival. They are to "come one—come all!" It needs no advertisement, by way of attraction, that "*a troop of light-horse will be on the ground*"! On the contrary, they eschew horses, as the most short-lived, uncertain and expensive machines that can be employed by men who act on the principle that every little makes a mickle, and, therefore, that the *cost of everything must be counted*—even pennies more than pounds, for "pounds will take care of themselves."

Of all the features of this exhibition, except such as displayed the handiwork of New-England housewives and their daughters, the most admirable and interesting to every Southern man must have been the *plowing and hauling matches*, exclusively with oxen, and exclusively handled by their owners.

The Committee reported 18 teams as having been entered, while 16 appeared to contend for the prizes. Of the absentees, one gave "*a satisfactory excuse*," and the other was understood to be sick; for it is worthy of notice that, as the ground required to be plowed depends on the number of competitors, they are compelled to make their entries beforehand, long enough to allow of suitable ground being engaged for the purpose, and if afterward they don't come to the mark, or give a good excuse, they are forever after excluded from competition for a premium of that Society. We go the more into these particulars, in the way of information for those who may be engaged in the patriotic service of getting up such societies in other States.

On the stone fence, inclosing the lot to be plowed, sat, as it was estimated, not less than 4,000 spectators; yet not the slightest press or disturbance took place. So quiet and interesting was the whole scene, that, as stated by the Committee, the commands of the plowmen to their teams could be distinctly heard from one side of the field to the other. And here was exhibited, in the equal patience of the owner and his team—in the kindness of the one and the docility of the other—the beauty and perfection of New-England husbandry, in the most important branch of the art. Not a blow was struck, nor a word said, that could wound the sensibility of a child. There they moved, sixteen span of noble oxen, bending all their strength to a sward as tough as ever plow turned up to sun and air—every ox seeming to participate the emulation of his master. The same may in general be said of the hauling-match in the afternoon, where the powers of this noble animal were again exhibited in hauling up a plain considerably inclining, a cart weighing probably not much short of a thousand weight, with a load of 4,000 weight of stone; then bringing the same load down, with their heads proudly elevated to hold it back; and again backing the whole cart and 4,000 weight up the hill, a distance of probably less than a hundred and fifty yards!

On seeing this wonderful performance by one yoke of oxen, without an oath, or a blow more than enough to kill a horse-fly, we could not but be carried back to the remembrance of three yoke going in Maryland with a hogshhead of tobacco (1,000 pounds) to the inspection-house, and reckoning it quite a feat to take it there, some four or five miles, and get back safely at night. And again, lately, in the neighborhood of Natchez, seeing five and six yoke creeping along, with a half cord of wood, or a few bales of cotton.

In fact, the proverbial sagacity, as well as the self-command, kindness and skill of New-England farmers, are in nothing more conspicuous than in their preference for and treatment of *their oxen*! They seem to love and rely on them next after their wives and children; and as we have elsewhere hinted, might

almost be taken for descendants of the Egyptians, who worshiped *Osiris* in the form of a beautiful bull—except that their bull was white; and it may be doubted if any one ever saw, or, as Sammy Veller says, ever saw a man that ever saw a *white ox in Massachusetts*. We are not sure that such an one would not be gored to death by his fellows, nor would it display a more senseless and unreasonable prejudice than was exhibited by a nation of humpbacked people of whom we read that a well-set, straight, athletic man, like a Kentuckian, getting in among them, they stoned him to death on the ground of *his monstrous deformity!*

Although Mr. EARLE, the Editor of the *Worcester Spy*, whom we are not sure of ever having had the pleasure to see, very much overrated our own humble part in this farmers' exhibition, we agree with him in his general estimate of its character and influences, and in the following particulars, which, being better said to our hand, we gladly adopt. We unite with him emphatically: for we, too, remarked it with particular satisfaction, that the most perfect order and harmony were apparent during the day, and that no scenes of intemperance were visible to mar the pleasures of the occasion:

"The display of domestic manufactures, embracing a great variety of useful and ornamental articles, attracted, as usual, large crowds of admirers. There were magnificent specimens of ladies' needle-work, wrought in the most exquisite style and workmanship. There was also a beautiful and superior collection of various articles of professional skill in almost every department of art and science. We noticed with pride the exhibition of farming and culinary implements, including almost every improvement in style and utility—the former apparently destined to work a glorious revolution in agricultural operations, while the latter embraced pleasurable evidence of advantages in promoting the convenience and ease of household labors.

"The collection of animals at the show was distinguished for great superiority, and the criticism which it received from the several Committees appointed for the purpose of determining its merits, reflected the highest credit to those who had aided in sustaining it. The qualities displayed in this exhibition evinced rare specimens of beauty, strength and service. Some of the cattle were the finest ever seen in Worcester. The collection of fat cattle and heifers particularly called forth unbounded approbation, as being far superior to that of any former year. Of fat cattle there were more in number than on some of the last annual exhibitions, though there were fewer entries. We have not room to speak in detail of this very important branch of the Fair, and we can render but slight justice to the competitors when we say, that on the whole the exhibition of animals this year was really of a superior order, and as we are informed from reliable authority, has not been surpassed by any similar exhibition, the present year, in any part of the country. In some respects, however, there were evident defects, and a manifest want of improvement, a hint which we hope will not be lost, especially in reference to milch cows, in which, judging from those produced at the Fair, there is much lack of interest and attention. We trust that another year will witness a commendable progress in enhancing the value and improvement in dairy stock, a species of stock eminently worthy of attention, as being capable of returning a large per cent. on the labor and capital employed."

We confess our disappointment on looking through the pens appointed for *milch cows*, and were therefore the less surprised at the animadversions on this point of the exhibition made in the interesting Report of the Chairman, Mr. Thompson, of the *Vaccine Committee*, wherein he stated the significant fact that the *quality of their cows* should be an object of most earnest attention in a county where the income from cows is one-fourth of the income from all the cows in the State, and more than double the amount from any other county. "The average value of neat cattle," adds Mr. Thompson, "as returned throughout the State of New-York is \$19; that of Worcester \$20 by the last census. By the New-York returns, it seems that one-third of the neat cattle of that State are milch cows. Taking that basis for this county, the average income of each cow is about \$21." We don't exactly understand the process of his calculation, but the Report goes on to add, very significantly, and, we doubt not, truly, "the cap-

ital in this branch of business in this county is \$1,000,000. This amount in mechanical business would be sufficient to create in the mechanic a strong desire to be in possession of all the improvements and facilities within his reach, for the more profitable prosecution of his business." "There are," he farther says, "only two branches of agricultural and nine of mechanical industry in the whole Commonwealth, that yield a greater income than that *derived from cows*"—meaning, we suppose, their dairy products, not their natural increase.

Here we may mention that we heard from Mr. JOHN BROOKS, of Princeton, Massachusetts, another evidence in favor of the reality and truth, in the main, of the "Cow Book," translated from the French and published in this journal. Mr. Brooks is one of the most exemplary, industrious and intelligent farmers of New-England, and he avers explicitly that he has no fear of ever being again mistaken in the qualities of a cow, or in the milking promises of a calf, being guided by the marks for judgment and selection laid down in that work. He tells of a dairy of eight cows whose yield of milk he pronounced accurately within one quart, when they were in full milk. Several gentlemen of unquestionable truth and judgment, have declared their belief in "the signs," (as far as they had used opportunities of observation.) Among them are Col. B. TAYLOR, of Columbia, S. C., Mr. BELL, of Morrisiana, proprietor of a very large dairy near New-York, and Mr. RANDALL, well known to the whole agricultural community. Supposing that to be a reliable guide, and that "like begets like" in breeding cattle, and there is nothing to prevent a great, and general, and rapid improvement of the stock of milch cattle throughout the country.

About the *show of sheep* at Worcester, the least said, perhaps, the better, so we will not butt our head against them. "A beggarly account of empty boxes" tells the story literally and truly. 'There was one gentleman of that race who was not ashamed to sport his *four horns* publicly; but for the honor of our country he was said to come *from Africa*! His fleece had the appearance of being uncommonly coarse and *long*, as if it might suit peculiarly well for the clothing of another woolly race, also originally from his own country. There was, too, an uncommonly large, fine-looking young ram, apparently of "country blood," labeled "long-wool sheep." We know not what respect was paid to him by the Committee. He went away in the afternoon with a sullen air, (probably without any dinner,) riding in a cart alone and magisterially, drawn by a pair of noble oxen.

The *cheese* exhibited on this occasion was pronounced by the appropriate Committee never to have been better. That cheese should improve is one of the fruits of a better and more steady market in Europe. In their gallantry they ascribe its excellence to the careful attention and nice management of Worcester *housewives*. In this we doubt not in the least their correctness; and when we shall have shared with this Committee, if that should ever be our happy lot, the honor of having been let into the mysteries of their nice dairies, and the enjoyment of their buttermilk and other nice products, we will go as far as he who went the farthest in saying that Massachusetts dairy women excel in all that is commendable and requisite, "the goddess of the ancients, who presided over this department." For the nonce, however, we would respectfully suggest that, in our poor judgment, this Committee would not have erred if they had recommended that their premiums for cheese and butter, and all household products, which are in fact usually the fruit of good *housewifery*, rather than good *husbandry*, should be bestowed not in *money* on the *husband*, but in *pieces of plate*, or *appropriate*

books, or other handsome and enduring memorials, *on the wives*, to be kept by them *as their own*, and as trophies of their diligence and thrift more precious than rubies, to be exhibited to their friends, and finally to be handed down as tokens of parental love and affection, to notable and dutiful daughters. We venture even to suggest to this ancient and considerate Association of farmers, whether the time has not arrived when more "mind" is to be thrown in among the plows as well as the "spindles," and whether it would not be expedient now to bestow some of their premiums in *knowledge* instead of *pelf*—in *books* rather than in *money*; and whether there are not in the signs of the times sufficient evidence to warrant the belief that this change, at least to a considerable extent, in the the direction of the rewards and the patronage of the Society would be but in accordance with a corresponding change in public sentiment as respects the application of science and book knowledge to agricultural affairs?

If we are not egregiously deceived in the tokens of the age, the time is not distant when boys who are to be farmers will be as expressly taught for their profession as those who are to "follow the sea" are now taught navigation. If in this we are not mistaken, surely a large portion of the funds of Agricultural Associations, and appropriations by public authorities, ought to be distributed in books preparatory to a more enlightened cultivation of the soil. Turning again, for convenience, to the "*Spy*," we quote Mr. EARLE with confidence in his judgment and better opportunities of comparison, where he says of the horticultural department—"It was in all respects equal to the anticipations of its friends, and superior to that of any former year. This was especially the fact in relation to pears and late peaches. Of pears there were something like three hundred lots entered, with a much less proportion than usual of *ordinary* kinds. The variety of peaches was very large, embracing several new and splendid kinds." Few things can be so particularly referred to as indicative of New-England perseverance and refined horticultural taste as the splendid exhibitions of fruit—apples, pears, plums and grapes—more especially when we refer to the climate. On this occasion we had not leisure for anything like a careful inspection of the fruit. In plums it did not strike us as remarkable, but the show of apples, pears and various vegetables was truly superb. There was a gentleman there, on a visit to Governor Davis, who sat on the left of the President at the dinner table. He brought with him to his friend, some noble specimens of "*black Hamburg*" grapes, which were not intended for, but somehow found their way to the exhibition; and the unanimous verdict was, that if these, the gentleman and his grapes, were fair specimens of the soil and climate of *New-Bedford*, she has other things besides her hooks and harpoons that are very *taking*!

Of the "*pigs*" at this exhibition we need say but little. If they fell much short of our expectation in numbers, deficiency in what was made up by their quality, for *New-England* uses and management. The hog, as every one knows, leads in the North and in the South a very different sort of life, reversing, as some would say, the habits of their owners respectively. Here in New-England the function and habits of the grunter consists entirely in *eating and sleeping*. Stuffed to obesity, his faculties remain uncultivated and dormant, while his carcass turns all into fat. How different the destiny and habits of his brethren in the South! There, notwithstanding the heat of the climate, he leads a life of labor and vigilance, in all seasons, ever on the alert for the means of subsistence. Instead of close confinement, shut out from the light of heaven and exempt from

the animating excitement of an empty stomach, the southern hog traverses the fields, and woods, and meadows, and mountains, from the rising of the sun to the going down thereof, in search of "creature comforts," as persimmons, and acorns, and nuts, in company with his rivals, brothers and sisters, and cousins, with all of whom he sleeps o' nights without sense or deed of sin or shame. Sometimes you will see them all waiting under a stray peach or apple tree in an old field, watching and scrambling for the fruit by its sound as it falls, like boys round a bandy-ball. Kept thus constantly on the trot, working hardly, though it may be sometimes roguishly, for their living, the southern pig has *time to grow* and acquire the name of hog before he dies, weighing not more, if it can be helped, than 160 at eighteen months. Thus his flesh acquires a proper texture and consistency, or "hardness," as it is termed, which, if cured by a good, thrifty, managing, and well bred and *brought up* housewife, comes out of the smoke-house worth, as bacon, its weight in gold—red and juicy, and savory, and tender, and yet firm; neither too salt nor too fresh, too hard nor too soft; with, in short, a *je ne sais quoi* to be found in the bacon of no other part of the world, except Westphalia, outside the five corn-growing States, *Maryland, Virginia, North Carolina, Kentucky and Tennessee*. We should not be afraid to bet any wager that for pork—"pickled pork"—all England—Old England—could not beat the hogs that were exhibited at Worcester.

Very much beyond our design or expectation as we have drawn out this desultory notice, we cannot draw it to a close without repeating with admiration, that throughout the vast fields and houses of exhibition thronged with such an unparalleled concourse of people, we saw not a sign of intoxication, nor of anything, anywhere, to produce it. And now we must steal a brief space to express our humble approval of the good taste which winds up these festivals for the men with a *ball for the amusement of the ladies*. Honored with an invitation to the one which made the finale to the gala-day at Worcester, and accompanied by one of refined taste, whose observation is more exact than ours, we must declare that we never saw an assembly, except some at Charleston last winter, where the young ladies were as uniformly handsome, and dressed in such perfect style of chaste if not rather severe simplicity and true elegance, marking the happy medium between carelessness on the one side and ostentatious gaudiness on the other. Regarding it in the light of an *agricultural ball*, incidental to a great display of agricultural industry, we are not traveling beyond the line of the occasion to add, and even if we were we would not deny ourselves the personal satisfaction we have in adding, as to the *young gentlemen* in attendance on the ball, that we never witnessed a higher measure of good breeding and beautiful propriety than was displayed on their part throughout. No wall-flowers were made of young ladies who happened not to be wealthy or popular: all were invited to dance, while the elder ladies were treated with respectful attention and seasonably served with refreshments in genteel abundance without vulgar superfluity. There was no skulking or shirking away of the young men from the ladies, into withdrawing rooms and card rooms, for the sake of drinking and gambling. Oh! how differently have we seen these things *managed* in other times and places, as who has not? But, thank God! the world is waking up to the *love of knowledge, and knowledge is everywhere the sure precursor of reform and the best parent of virtue*.

HORTICULTURAL SOCIETIES.

INTELLIGENCE AND SPIRIT OF AMERICAN FARMERS.

How stands the Case?

As it may be hoped that associations for promoting variety and excellence in fruits and flowers will be multiplying in the country, it may be well to publish occasionally a few of the most approved regulations for conducting them. The following were in force at the late exhibition at Princeton, where, we understand, as well as at Newark, the display was exceedingly creditable to the taste of the members and the neighborhood. We very much regretted it was impossible to comply with the invitations of friends to be present at both of them. May we not lament the existence of a taste which still calls for such premiums to be delivered in "*chink*," instead of books, or plate, or medals, or other enduring memorials, however small in money value, but which might be preserved as family trophies?

REGULATIONS.

Any person may deposit articles for exhibition, but premiums will be awarded to members only; but this is not to prevent those who are not members from depositing articles for premiums, provided, *at the time of deposit*, they announce their intention of becoming members, and pay the annual dues for one year.

All premiums not called for within three months will revert to the Society.

Articles for which a distinct premium has been awarded cannot be put in competition again at the same meeting in a general display.

Committees shall have the discretionary

power of withholding premiums, if the articles exhibited do not merit them.

Every article, if possible, is to be accompanied by its proper name.

It is also desirable that the fruits, vegetables and flowers exhibited should be accompanied by short observations on the mode of cultivation, if peculiar, together with any other remarks of utility.

It is clearly to be understood that all fruits, vegetables, flowers, &c. brought for competition, are to be the growth of the competitors.

Dishes and glasses will be furnished by the Society to contributors, for the purpose of exhibiting their productions, if required.

RICHARD S. FIELD, President.

WM. W. KING, Rec. Sec.

It would be better if agricultural societies having in view the culture of the great staples of the plow, would leave to special societies the business of promoting improvements in horticulture, and reserve all the means they can command for eliciting and diffusing *knowledge*. Advancement in Agriculture depends not on the number of experiments and the exhibition of results, but on a knowledge of the structure of implements, the qualities of the fertilizers, and the processes employed to reach such results, with an explanation of the principles involved in the germination, growth and increase of the animal or the crop. The two great wants of American Agriculture now are *capital and knowledge*! The average wheat crop of England has been gradually brought from twelve bushels up to an average of between twenty-five and twenty-eight or thirty. This has been effected by horse-hoe husbandry and by turnip-culture, and now by thorough draining. But knowledge, the result of scientific investigation, is doing more for it now than industry has done before. Liebig himself has declared that all future improvements in Agriculture must result from the application of science.

We have before us a *Prize Essay*, of more than 400 pages, with engravings—being a report on the agricultural progression of a single county. (Norfolk) elicited

by a premium offered by the Royal Agricultural Society—which, even for our own country, may be turned to more valuable account for the ease of that interest than all the premiums that will be given this year in the United States for fat-test bullocks and swine.

But how different the spirit which prevails in that country, among the friends of the plow, from the apathy existing in this? In the case of this report, the learned author acknowledges himself under obligations to not less than *eighty practical farmers in one county for materials*. There of the 700 farmers' societies and clubs, there is not one that is not known to all the others. Here, a public call on their officers only for the name of their Society and its whereabouts, to be answered by a single line, postage *unpaid*, is answered by six, perhaps eight, in the whole country! We boast of our superior intelligence—the growth of free institutions! Where are the proofs of knowledge on the part of American farmers in the statistics, the philosophy, the political claims of their profession? In New-York, the product of their labor is more than \$100,000,000, and their numbers to that of the lawyers as 80 to 1; yet, in a Convention to model the Constitution for the government and protection of their lives and property, the lawyers about equal them in number! Where are their libraries, provided to make skillful and accomplished men of their sons? Why, the merchants' clerks and their employers in New-York have provided for them 24,000 volumes! How many volumes make up the library of any Farmers' Club or Society in the Union?—But have agriculturists any occasion for books? Can't any fool measure a bushel of corn, or stuff a hog or a bullock, or milk a cow, or yoke a span of oxen? Ay, surely can he!

HYMN* BY GEORGE LUNT.

ONCE more amid the harvest fields with Autumn's stores embrowned,
With flowers and fruits and golden grains in rich profusion crowned,
Behind our steps the Summer fades; before us all appear
The hues that with their glory paint the closing time of year.

Once more we've seen the genial Earth fling Winter from her arms,
For us unfold her mighty heart, and give us all her charms;
Once more we've met the Summer's sun amid the blaze of June,
And gathered Nature's bounties in beneath the harvest moon.

The forest leaves, of late so fresh, lie strewn and withered round;
The voice of coming storms sweeps o'er the naked ground;
The birds that filled the living air have spread their wonted wing
Afar beneath another sky to seek another spring.

Yet though the circling seasons change, and each resumes its reign,
Oh! not for this we grieve to see the year's departing train;
For hopes that flushed the vernal hour have found their rich reward,
And smiles should cheer the wintry hearth where plenty decks the board.

Like men we met our honest toils with every rising morn;
Like men we bore the fervid heat amid the bending corn;
And now with grateful hearts we come to bless the bounteous Power
Whose goodness sent the ripening sun and poured the kindly shower.

And still to seek Thy fostering hand and own Thy constant care,
May we and ours to endless years Thy glorious name declare!
Thine are our fields, and flocks, and herds, and all that crowns our days!
And still to Thee, Almighty Lord! eternal be the praise!

* Written for the public exercises of the Essex Agricultural Society at Lynn, Mass
(448)

ADDRESS ON AGRICULTURE,

Delivered, by request, on the Eighth of October, 1846, before the Agricultural Society of Worcester, Mass.

BY JOHN S. SKINNER.

WORCESTER, Mass. September 1, 1846.

JOHN S. SKINNER, Esq.

Dear Sir : I have the pleasure to communicate to you the request of the Committee of Arrangements of the Worcester County Agricultural Society, that you would do them the honor to deliver a public Address to the Society on the day of their approaching Cattle-Show and Exhibition of Manufactures, the 8th of October next. It is highly gratifying to me to be made the medium of conveying the expression of their wishes to you, and I would respectfully add my own desire that you may find it convenient to comply with the application.

I am, Sir, with great respect, your most obt' servt.

JOHN W. LINCOLN.

Cor. Secretary Worcester Co. Agricultural Society.

JOHN S. SKINNER, Esq.

Dear Sir : I am desired by the Committee of Arrangements for the Cattle-Show and Exhibition of Manufactures by the Worcester County Agricultural Society, to express to you their grateful acknowledgments for the very useful and instructive Address delivered by you to the Society this day, and to request of you the additional favor that you would be pleased to furnish them a copy of it for publication.

For the Committee,

JOHN W. LINCOLN, Chairman.

Worcester, 8th October, 1846.

How may I hope to justify my acceptance of the invitation with which you have honored me to appear here, in the very heart of the old Bay State, to discourse about Agriculture to her practical farmers? Ay, even to the farmers of old Worcester, whose intellectual and physical energies have so well triumphed over a rugged and churlish soil, and a climate certainly not the most congenial to the growth of the great staples of agricultural industry?

To expose to deserved ridicule the most irrational enterprises, we have sometimes heard them compared to the folly of him who would go with coals to sell at Newcastle! But who ever, till now, actually undertook anything so unprofitable and extravagant! Yet, the story may have reached you of a speculating genius of the "universal Yankee nation," who amassed a large fortune by taking a cargo of *warming-pans* to sell in the *West Indies*! Happening to arrive just in the nick of time, when the sugar planters were boiling their cane, he took off the tops of his warming-pans, and there he had, I guess, the best sort of ladles to dip up the cane juice, and cullenders to strain off all its impurities. Would now that I could dip up something from the mass of agricultural materials worthy of your consideration, and so divest it of all error and humbuggery as to present you nothing but the pure grains of useful practical knowledge.

I say of useful practical knowledge, for, to tell the naked truth, the community has become tired of hearing our professional orators, to whom farmers are so much accustomed to look, commending Agriculture in stereotype phrases for its antiquity, its dignity, its universality, ay, and even for its honesty! They take us back

even beyond the hunter state, and tell us how God took the first man and put him in a garden; and then they would reconcile you to your profession by recounting how Emperors have condescended, once a year, to touch the handles of the plow.

Now, my friends, for my part, I have long been of Poor Richard's opinion, that "a plowman on his feet is taller than an Emperor on his knees"—and would not all rulers do more honor to themselves than to Agriculture, if they would lead nations to honor the plow rather than the sword?—if they would strew the fields more with grain, rather than with blood?

Instead, then, of lavishing, at this late day, unavailing and superfluous eulogies on Agriculture—let rulers and orators rather teach us how its labor is to be economized to meet the exigency of low prices—how it can be most effectually protected, not only against insects injurious to grain and fruit—but against a more pestiferous class of the suck-blood order—*demagogues*, assuming new forms with every change of the political season; stereotype law-makers, who flatter and wheedle the farmer; and parasites, who live on the fruits of his industry. Let them show us what Governments can be made to do for the plow in return for their enormous exactions from its produce for the benefit of other pursuits. But I have said how much I should be pleased if I could sift from the mass of floating theories and humbugs that infest the field of agricultural inquiry, some practical facts and suggestions that might be useful to offer you in return for the honor you have done me. And yet, as to mere practical details—the quantity to sow, and the distance to plant; how much grain can be gotten from an acre, or butter from a cow, according as you stuff the one or the other—the time, in my humble apprehension—thanks to the progress of agricultural knowledge—has gone by for dwelling exclusively or chiefly on these. Such details were well enough when, more than a quarter of a century past, he who now addresses you caused the first agricultural paper to be put forth, without encouragement and in defiance of ridicule and predictions of failure; but now that, by means of many such and very able journals, we have accumulated a mass of facts based on careful and repeated experiments, is it not time to begin to combine and compare them, for the establishment of regular systems of practice, thus to rescue Agriculture from the reproach of empiricism, which justly attaches even to the most successful practice of every art when its principles are not understood by those who follow it, so that it may be hereafter characterized and followed as an intellectual profession, based, as well as any other, on sure and certain laws? Shall we not begin now to encourage the young and inquiring agriculturist to go deeper into the subject? What occasion have we, for example, to go on descanting in set phrases for ever and for ever on the *value of manure* and the more than miserly care with which every reflecting and sagacious farmer will hoard it up—not, like the miser, for the sordid pleasure of contemplating it in the heap, but to *distribute* it, and that not too widely, but as both should be distributed, with *liberality and judgment*?

The veriest tyro in the art of Agriculture—for it is a great art—may now be presumed to know that every crop subtracts from the soil a certain amount of ingredients which are just as indispensable to the composition, growth and sustenance of Indian corn, of wheat, of hay and of oats, and all other crops, as these are, again, to give strength to the ox, milkiness to the cow, and fatness to the hog; and that if you would save your land from exhaustion and barrenness, you must not fail to restore, by some means, those ingredients when they have been thus subtracted

and carried off—whether in the form of grain or grass, or fruit, or beef, or butter, or cheese, it matters not. The time, I say, has come, that “it needs no ghost come from the grave to tell us this ;” and hence it is, that he who willingly permits a hoof, or a horn, or even a bone, to be thrown away, has no claim to a seat among frugal and considerate farmers. And here let me remark, for the benefit of those who are in the habit of speaking sneeringly of book knowledge as connected with Agriculture, that it is not the mere practical working man, useful and worthy of respect as all such men are, who would of himself ever make the discovery ; no, it is to the scientific investigator we owe the knowledge, by chemical analysis, that even a *single pound* of bone contains as much of a certain substance, composed of phosphate of lime and other compounds, as is contained in twenty-eight pounds of wheat, for instance, or in two hundred and fifty pounds of potatoes. It is to the man *educated in a knowledge of the principles of Agriculture*, in a word, that we must look for an acquaintance with the fertilizing properties of *all* those ingredients which are indispensable to the healthy growth as well of plants as of the animals by which those plants are consumed. Nor will the just and sagacious farmer delay payment of the debt which he thus contracts to his land, by bearing off the elements of its fertility, any more than to the veriest Shylock among his money creditors ; for both these creditors, the land no less than the money lender, are in the habit of charging interest night and day, Sundays not excepted ; and you all know that “he has a short Lent who owes money to be paid at Easter.” But while I forbear to dwell, before this enlightened assembly, on mere matters of practice, based on repeated experiments, and now promulgated, far and wide, by our numerous agricultural journals of the highest merit and the widest circulation, let me the more earnestly reprobate the idea that there is nothing farther to be learned of the philosophy and the principles of Agriculture—nothing more of the composition of manures, of the structure of implements, of the physiology of plants or of animals. Who has even yet fully solved the problem of the action of gypsum or plaster of Paris ? Some say it acts by attracting moisture from the atmosphere ; but if so, why should it act like magic, as I happen to know it does, on one farm, while on an adjoining one it is utterly effete and useless ? No, no ! my friends ; so far from the subject having been exhausted and closed to scientific explorers, let none dare say of its progress, in the presumptuous arrogance of Canute to the waves of the ocean, “Thus far shalt thou go, but no farther !” On the contrary, in the great scheme of an all-wise Providence, there is no feature so conservative as that which presents you only the *rude materials* of your art, and the elements of your industry, to be infinitely, ay, infinitely improved by assiduous study and ingenious experiment. It is that constant hope of discovering something new and useful which saves the human mind from the cancer of inactivity, and the soul from sinking under idleness and that oppressive ennui, the very thought of which is horrible to every man of spirit. Nay, it is this quality of improvability which is the soul of civilization itself, and saves the world from relapsing into universal barbarism and slavery !

As an earnest of what may yet be effected, we have but to compare the various and delicious fruits displayed at your noble exhibition of horticultural industry, in all their magnificent variety, with the bitter and rude originals from which they sprang, to see and acknowledge what has been done by bringing the *mind* to *direct the hand* in the field of Horticulture ! For, after all, let us never forget that it is the province of the mind to investigate, to discover and give orders,

while to execute only is the humble but indispensable office of the practical man. And as with fruits and with animals, so it is with grains, which are said to be the *bounty*, and with flowers, which have been called the *smiles of God*! See the dahlia, transplanted from its native Mexico, with its one simple, uniform color: how it has been made—not, again, by your mere practical man, but by thinking, cultivated, spirited horticulturists; by your Wilders, and your Walkers, and your Hoveys, French, Breck, Lincoln, Colton, and a host of others that might be named—to sport, either separately or combined on the same stem, the most delicate and the gaudiest hues of every flower! Let me rather insist that progress in agricultural improvement and the love of flowers are identical with advancement in civilization and the arts that most embellish life; else how does it happen that a passion for them breaks out and shows itself in the life and writings of so many of the most gifted and illustrious men of all ages and countries?

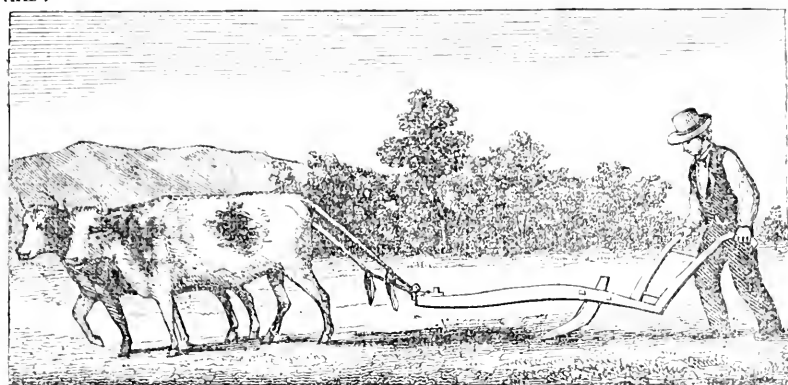
See, in the very midst of all the toils and anxieties of the Revolution, when the destinies of his country seemed to hang even more on his virtue than his skill, and when his whole soul was devoted to her deliverance, how minutely all the operations of his estates in Virginia were watched and directed by the Farmer of Mount Vernon! Behold, again, the great Statesman of the West, voluntarily retiring from his commanding position in the Senate—that sheet-anchor of the Republic—to look after and contemplate his flocks and herds, reposing on beds of blue-grass in the shades of Ashland! And do you not believe that your adopted son, the ornament of your State, and the pride of his country, takes as much pleasure in being known as the Farmer of Marshfield as in the title of “the Great Defender of the Constitution?” Nor, let me add, do I doubt that both he and his great compeer, Senator Calhoun, from what we have heard of his management, would shine as conspicuously in the field of Agriculture as of politics. May I not add, even here, without offence or impiety, may Heaven bless them both, for their powerful agency in averting one war, if they could not anticipate and prevent another! a war whereof the greatest evil would have been the stain it would have left upon this boasted age of Christian civilization?

And who, again, can doubt the *moral influence* of this passion for rural life and its pursuits, when once it takes root in the heart? Who, without unspeakable admiration of the great Creator of all things, can contemplate, at this season, the various and splendid hues of our—yes, of *our*—autumnal forests? And presently, when stern Winter’s icy breath shall wither every green, will not even he bring with him a feeling of comfort and grateful sensibility to the blessings, so universal in our country, of a warm and comfortable home? where every diligent farmer may realize what Thomson says of Industry:

————— “sullen Winter, cheered by him,
Sits at the social hearth, and happy hears
Th’ excluded tempest idly rave along.”

If, indeed, Agriculture be not in its nature a progressive, improvable art—if its destiny be to travel the same dull round for ever, like a horse in a cider-mill, without going forward—why not go back again to the practice of your Saxon forefathers, and hitch your plow, as they did, to the *tails of their oxen*, until, as late as the seventeenth century, since your first importation of cattle by Gov. Winslow, Parliament actually interfered to prevent the cruel practice, by “an Act against plowing by the tayle, and pulling the wool off living sheep!” How,

I pray you, would one of your Worcester farmers like to be caught in a fix like this?



THE MODE OF PLOWING PROHIBITED BY ACT OF PARLIAMENT, 1624.

With the swing plow of the present day, says an English writer, a pair of stout horses can plow deeper, and turn over more ground in the same space of time, than could have been done by a team of eight or ten oxen, with the cumbrous wooden implement which was almost exclusively employed here some forty years ago. Prior to the present century, the plow was very clumsy and imperfect, requiring six or ten horses, sometimes twelve oxen.

No, my friends! So far from Agriculture not being a liberal and improving pursuit, its march has been *pari passu* with Liberty itself, as may be seen by a comparison of the form of the implements and the state of the art in England and the United States as contrasted with countries whose institutions are less free, as in Spain, and Portugal, and Russia, and even in France, where the rude plow described by Virgil is still in use? An Englishman traveling recently for agricultural observation in the North of Europe, says, that in adjacent fields he saw three or four hundred women at the plow—white, not black women—without hat or bonnet, or shoe or stocking. That the able-bodied men are almost all either in the army, or working as mechanics in town.

Yes, gentlemen, we may be assured that what we now need, and that for which I shall plead for the residue of my days, through the work under my charge, *THE FARMERS' LIBRARY AND MONTHLY JOURNAL OF AGRICULTURE*, is, *suitable instruction for the rising generation in all our schools*, not merely in the professional and military, but in all the arts and sciences connected with Agriculture and all our industrial, useful and peaceful pursuits. And how is this to be done but by providing (as is done for our military) suitable institutions, adequately provided and maintained, to prepare and send out through the country accomplished, high-minded, because well paid and duly honored, instructors, who would be qualified to take charge of agricultural schools in all the States? To secure an equal amount of agricultural science for each State, according to population, they might be appointed as the Cadets are at West Point, with this difference, that when graduated they would be discharged without any pay from Government, but with a diploma that would be the best sort of capital with which to enter upon life—a certificate of capacity *to create, not to destroy*? When the glorious light that will thus be diffused shall have been spread over the country, then will your vocation be lifted in the public consideration to the

level of the more favored and less productive employments. Then will the followers of the plow, rising in the power and self-respect which are the offspring of improved intelligence, see that provision is first, and above all, made for the diffusion of knowledge (that most glorious attribute of the Deity himself—that mother of all the virtues) *among the cultivators of the soil*, the producers of the necessities of life and the materials—the wool and the warp—of universal prosperity. In this enlightenment of the *yeomanry* of the country, and in this alone, must we look, not merely for the prosperity, but for the security and preservation of the Republic itself. Until that provision is made, your course as a free and independent nation will be as capricious, your destiny as uncertain, as the ship on the ocean without chart or compass. In halcyon weather, she may spread abroad her white sails to the favoring breeze, and all on board rejoice in her promising career; but ere the dawning of another day she may bilge on hidden rocks, or be swept from the bosom of the ocean “as chaff that the storm carrieth away.”

For my own part, I should never tire of dwelling on the importance of beginning at the root, by suitable preparation of the rising generation, for realizing all great national improvements. By particular ablutions, you may wash away the dust or pestiferous insects from the branches of your trees, but if you would give vigor to the stem, and impart to them fruitfulness and longevity, you must cultivate and manure *at the root*. Yes, my friends, I even hold with confidence that no nation is to be considered on the high road of national progress, or secure in the enjoyment of its liberties, until its people shall come, with Solomon, to consider “wisdom as the principal thing,” and to honor and recompense those whose glorious office it is to disseminate useful and virtuous knowledge, as among the greatest benefactors of the human race, when their office is properly understood and faithfully executed. And, may I not emphatically ask you, who is entitled to the highest honor and the most liberal reward: the well qualified, conscientious instructor of youth, he on whom you have devolved the highest, the noblest of all trusts, that of imbuing your son with useful knowledge, such as will make him an honor to his parents and his country, and a benefactor to mankind—or they whose duty it is, in execution of the wise, or it may be wicked, policy of rulers, to shed the blood of their fellow creatures, or those again, who live by the contentions and the maladies of their fellow men? Does any one now-a-days dare the insulting inquiry, what occasion has the farmer for book knowledge? Who could believe it possible that an experimental and intellectual pursuit like Agriculture has no necessity for special education—no occasion to be familiar with the accumulated and recorded experience of ages, and the discoveries that every age brings forth?

If to be an eminent farmer only requires good manipulations of the *present* modes of Agriculture, without any hope of improvement from science, to lead and direct practice, then indeed the business of Agriculture has arrived at a point to *repel* liberally educated men from pursuing it as an occupation. That science has hitherto done but little directly for Agriculture is freely confessed; but how long has science been directly devoted to this object? The time has been so short, and the difficulties of the subject so great—so little has been done for it by public sentiment, and so much less by public legislation—it has been so postponed for all other interests, that the wonder is not that Davy, and Boussingault, and Petzholdt, and Liebig, and Johnstone, and Thaër, and our own Silliman, and Taylor, and Hitchcock, and Dana, and Teschemacher, and Rufin, and Buel, have

done so little, but that they have done so much, to prepare the way for future laborers.

Every thing must have a beginning. Astronomy had its origin in astrology, and though for a long time indebted to it for the principal part of its progress, the daughter has yet demonstrated the absurdity of her mother's fantastic imaginations and absurd predictions, until it has deprived her of all esteem except among the most benighted tribes of Asia and Africa.

The noble science of Chemistry, again, is based upon isolated facts accumulated by alchemists, whose labors had been otherwise wasted upon visionary and impracticable objects ; but, thanks to the labors of the philosopher and the educated man ! we can now, by the laws of these sciences, Astronomy and Chemistry, calculate the distance of heavenly bodies, and detect the chemical properties of organic matter ; so that an eminent lecturer in Europe has lately expressed the opinion that in Scotland, within a few years, a farmer will make out his prescription for specific manures, according to the crop he wishes to cultivate, and send it to an agricultural chemist to be compounded according to order, as the apothecary makes up the doctor's prescription for any of the various disorders that "flesh is heir to."

But to make a pursuit or even a pastime attractive—to insure a knowledge of its rules and principles—to inspire a devotion to it for the sake of its physical exercise or intellectual enjoyments, we must be attached to it by the force of youthful associations. You can no more incline a grown mind, fixed in its habits and character, to shake off its habitual languor, and give it a sharp appetite and keen thirst, and animate it to enduring efforts after knowledge, than you can make a rope-dancer out of an octogenarian, or turn the stagnant pool into living water.

Hence the amusing literature, even before the science of Agriculture, should be taught in our schools, as the boy tolls the bird into his trap, by sprinkling his bait on the outside. But, unlike the bird, when he is caught—when he has fairly tasted of the bait—when he has been led on by reading something of the natural history of Agriculture and Horticulture—of the insects that undermine at the root, and the birds and squirrels that ravage and feed upon the grain—when thus seduced, as it were, to contract a habit of reading and research connected with rural life, he turns his back on idle company and vicious courses for ever after, and becomes, ere he knows it, a willing and delighted captive to the charming fascinations that lead him on with insatiable curiosity to explore all the various apartments in the Temple of Knowledge.

Is there any man who hears me among you, farmers of Worcester, who would not delight to have his son taught at school, by well paid and accomplished gentlemen instructors, so much, for instance, of the Natural History of birds as would enable him to know to what group, whether of air, earth, or water, any individual he might meet with belonged ? and whether a friend or an enemy to the agriculturist :—enough of *Entomology* to say to what order and class any insect belongs, and to describe its habits, whether useful, as the silk-worm or the bee—predatory, as the Hessian fly—or poisonous, as the spider ? Yet more, that he should know something of *Geology*, which, as it traces the connection between the exterior features and the internal structure of the earth, bears directly upon Agriculture, and opens to every inquisitive mind "a book wherein he may read strange matters ?" Ought not every farmer who has the means be ashamed not to have his son, who is to follow his pursuit, taught, as the Cadets at the Mili-

tary Academy are taught, the art of surveying and mapping—so far, at least, as to be able, by a knowledge of practical mathematics, to lay down the boundaries, and be able to calculate with exactness the contents, of every lot of his land? Should he not, by all means, endeavor to have him taught as much of Botany as would enable him to tell the names and to classify the plants springing up everywhere under his feet, and to say whether noxious or medicinal? Ought not the rising generation of cultivators of the soil to be sufficiently instructed, in all our schools, in the principles of mechanical philosophy, to judge of the power and suitableness of all agricultural machinery—whether or not it be constructed in a form and on principles to achieve, with the least labor and cost, the greatest attainable results? Ought not your sons, too, be taught at school, as they are at our military schools, enough of Mineralogy and Chemistry, animal and vegetable, to ascertain and describe the character and properties of lime, of plaster, and all the various manures, the component parts of the soil, and of the plants that grow on it—to designate the elements necessary to the production of various crops—and, by analysis, to determine the value of these crops when used to promote flesh in the bullock, milkiness in the cow, and wool on the sheep—all the properties, in a word, that give value to domestic animals, to land and to labor? Should not the cultivated agriculturist—he who aspires to the honor that ought to follow success in every calling—be as much ashamed to be ignorant of those things which are so immediately connected with the intellectual prosecution of his business, as the commander of a ship who should be forced, in time of danger, to acknowledge his ignorance of all the principles of navigation? Or are the independent republican, freehold cultivators of the American soil content to have their sons go on in their profession, working for ever as common sailors before the mast, with no minds of their own—ready to let out or to reef, as they are told—knowing, indeed, how to turn the glebe, but utterly ignorant of what elements it is composed—expert to mow the grain, but totally without a knowledge of the principles of vegetation, and of all the laws of vegetable physiology, which refer to the qualities of the soil and regulate the value of the various manures? It would be absurd to suppose that such education can be *absolutely universal*, but ought not all to aim at it who own land, and who are to *superintend agricultural capital* and labor?

Tell me not that farmers have no need of book knowledge, unless you would degrade them to the level of the beasts they drive. There is no occupation which can be so much benefited—none whose toils and condition demand and admit of such variety of entertaining knowledge, or which derives more benefit from the application of science than those of the farmer; and this he may provide for his son if he will begin by laying a broad foundation. That is, by providing, as I have before said, an ample supply of well instructed, well paid teachers, under whose example the office of instructor shall rise, as it deserves, above all others in public esteem, and as it would then be elevated in public usefulness.

It would not be long, after this shall have been accomplished, when the landed interest of this country would cease to ask imploringly and submissively, “Where can we obtain the means for this wide-spread diffusion of industrial knowledge?” for a much higher degree of popular intelligence would be reflected in the legislation of the Government; and that interest, with which all others flourish or decay, as the branches sympathize with the root of the tree, would be the first, instead of the last, to be cared for. Where, let me ask, have been obtained the hundreds of millions—ay, *hundreds of millions*—which your Representatives

have found the means to bestow, since the last war with England, for military uses, including *military instruction*?—for military surveys, charts, roads, ships, fortifications—palaces for the well, and hospitals for the sick? Of all these understand me not as complaining—but why can nothing be done, at the same time, for the arts of peace and the prosperity of peaceful and productive labor? If no other resource can be found, while so many millions are appropriated for war, and all the science and machinery of war and bloodshed, (being ourselves in no danger of invasion,) why not at least set apart something—the proceeds of the sales of public lands, if nothing else—that the sons of the soil, and those who are to follow Agriculture, and produce for all the very staff of life, may be better instructed in the use of the plow, and better enabled to conquer the difficulties that stand in the way of agricultural prosperity—which is, in fact, but another word for the “general welfare.” Why, in New-York, in a few years, by a voluntary association of merchants’ clerks, and the assistance of their employers, for the benefit of young men brought up to Commerce, a library of 24,000 volumes has been amassed. How many volumes compose the Farmers’ Libraries and the Farmers’ Clubs? Why, your very premiums, small as they are, are given in *money*!

Once more, then, and finally, let me ask who dare say that in agricultural and horticultural improvement the measure is full—that the race has been run, and the goal reached? That nothing remains to be done by individual enterprise, by associated efforts, or by the action of governments, State or Federal? No! gentlemen, no! In some things it may be true that wise policy consists in “masterly inactivity,” but not in your pursuit. On the contrary, there is none for which the past holds out more encouragement for continued investigation and diligence—no art or science in which what has been done may be considered shorter of what may yet be accomplished—none more neglected, if not abused—shall I, dare I add?—*because there is none more undervalued, in proportion to its real importance and its claim on the Government, even by those who follow it for their subsistence!* Yes, gentlemen, I dare say that what is now most needed is, not so much how much corn an acre of land may be made to produce—how much milk a cow can be made to yield—how much fat can be accumulated on the outside or the inside of a bullock or a hog—all—as well the land as the cow, the bullock and the hog—by *high feeding*. No! no! no! The great desideratum of American husbandry now is to impress more deeply, and as soon as possible, on the whole community the paramount necessity for such reform of public opinion as shall tend to a higher estimate of the political rights of Agriculture as the greatest of all national interests, and to a fonder and juster appreciation of it as a field for intellectual recreation and distinction—one to be, far above all others, regarded in the education of the rising generations, and in the policy and legislation of the country. To this consummation, so devoutly to be wished, let me repeat, I am devoting, in my humble way, through the columns of THE FARMERS’ LIBRARY—a work for which the publishers put at my disposal the best materials, and authorize me to employ the best artists to be found in any country. Hence, too, one prominent feature of that work is to give portraits and memorials of eminent leaders, not in fields of “blood and carnage,” but in agricultural improvement—such men as have been the boast of Massachusetts—Elliott, and Deane, and Pickering, and Lowell, and others, as fast as they can be had, and of their noble compeers in the grain-growing and the plantation States—to the end that, as far as my poor abilities and the support of liberal publishers can contri-

bute to that end, the young farmers of our country may be assured that, for excellence in the most laudable and useful of all occupations, one voice, at least, shall be heard in their praise, even though that be but as a still, small voice in the wilderness. To Van Rensselaer and Wadsworth of New-York, and Peters of Pennsylvania, and to Liebig and Loudon of other countries, justice has already been attempted. Their portraits have been delineated, and their labors described. If the same has not yet been done for other American benefactors of your pursuit, it has been because those who could, and whose filial piety should prompt them to aid us, have declined or postponed the solicited favor. In an early number will be presented the likeness of the ill-used WHITNEY, the inventor of the cotton-gin, and the creator of so many millions of national wealth for our country—one whose genius may be said at this moment to give activity to the millions of capital, itself the fruit of noble industry, now so skillfully employed throughout your Commonwealth, in communicating vitality to the dormant powers of the Merrimack and other rivers—raising up, as if charmed into existence by the music of their waters, great, active, expert and moral communities, to consume on the spot the surplus products of your fields and gardens.

Some have objected that, even in the failure of their relatives to aid us in giving memorials of eminent *American cultivators*, we should display in an *American work* the features and labors of *foreigners*, however distinguished by their contributions to agricultural science and literature, even of such men as Liebig and Loudon: but is it not the boast, the pride of your profession, that those who follow it in the true spirit are, by its very nature, imbued with a catholic temper that embraces the whole world in the bonds of a common fellowship? With them the maxim is that science owns no country—that Agriculture is of no politics—that horticulture belongs to no religion. The earth is their country—the common happiness their common religion. To Him whose hand spanneth the heavens, and who caused the waters to flow out of the rock, do they owe their allegiance! And as to England—the land of Tull, of Young, of Sinclair, of Loudon,—of Bacon, of Locke, of Shakspeare, and of Milton—what country can compare with her in what her illustrious men have done to make matter subservient to art, and all the gifts of Nature auxiliary to social purposes, and to the glory of the human intellect! And then, again, is nothing to be allowed to the pride of ancestry, that conservative spirit, given to us by God himself, to stimulate, to save, and to exalt us? That spirit which prompts History to cast her shadows of immortal deeds before and so beckon us forward in the road to virtuous renown! What American does not participate the noble sentiments of Allston, where he makes the daughter, in this very spirit, address the mother country?

"Though ages long have passed
Since our fathers left their home,
Their pilot in the blast,
O'er untraveled seas to roam,
Yet lives the blood of England in our veins;
And shall we not proclaim
That blood of honest fame,
Which no tyranny can tame
By its chains?"

"While the manners, while the arts,
That mould a nation's soul,
Shall cling around our hearts,
Between let oceans roll,
Our joint communion breaking with the sun!
Yet still from either beach
The voice of blood shall reach,
More audible than speech—
We are one!"

In this endeavor to lift your pursuit from being considered a mere mechanical drudgery, calling only for the exercise of plodding industry in the use of the animal functions, up to the rank of a proud profession, demanding the highest exercise of the mind, and to be lightened and relieved by various and captivating studies, let me again implore your coöperation, and that of every friend of the true and great interests of the country—yes, let me implore it as for an aim and a purpose in which we may contribute not merely to the benefit of your pursuit, but to the strength, and safety, and true glory of the Republic! It is only by such improved systems of agricultural education, that science will reflect her steady light on the course of the plow, and the most successful farmers shall come to be accounted as among the best informed and most virtuous citizens, and safest depositories of the highest public trusts: and that the laws enacted by men who represent a more enlightened constituency may be expected to conform more perfectly and faithfully to the public welfare. Then, and then only, will it come to pass that the opulent will regard Agriculture as the safest investment for their wealth. Then will the talented and ambitious turn to it as to the field in which excellence may hope for distinction—the literary man seek it as a path strewn as well with flowers as with fruits—and, last of all, if not above all, when thus your profession comes to be a guaranty for knowledge—as knowledge is the only sure foundation of virtue—the agriculturist will stand an equal chance with the lawyer, the doctor, and the soldier, to win that reward so much to be coveted by every gallant man—the smiles and the suffrages of the softer and the fairer sex.

Finally, I pray you to excuse me for detaining you so long, and allow me to add but a single sentence. If I had but one moment to evince my sensibility to the honor you have done me, and to make for it, in that moment, the best return in my power, it would be to repeat emphatically, for American, what has been said for English Agriculture—and with less occasion—"The age is still far off when of Agriculture it can be said, 'Proceed; to exceed is impossible;'" and he, indeed, must have profited but little by the experience of the last few years, who does not admit that, notwithstanding the science by which the present system of Agriculture is directed; notwithstanding the practical skill which now promotes the operations of the plowman and the plow; notwithstanding the knowledge of agricultural chemistry which now informs the farmer concerning what sorts of manures are required for different productions, and are best adapted for different soils; notwithstanding the introduction of artificial food, and the consequent enormous increase of sheep and cattle grazed for market; notwithstanding all these vast strides toward perfection, that man must be little advantaged by the knowledge he has acquired who does not perceive that Agriculture is *still in its infancy* in regard to the extent to which chemical science and mechanical ingenuity may be profitably applied in increasing and varying the productive powers of the soil. Now, gentlemen, farmers, freemen of Massachusetts, of whatever sect or party, where, I ask you, will you find the patriots to devote their minds and their hearts to the subject, until provision be made that the rising generation, sons of the soil, shall be taught not merely to "read, write and cipher," but how this application of science and mechanical ingenuity can be made most effectual for "increasing and varying the productions of the soil." That is, or deserves to be, the great question for American landholders. May I not leave it to your good judgment, to your sense of duty, to your patriotism, to answer it?

THE LONG-LEAF PINE OF NORTH CAROLINA.

LIABILITY OF TREES TO BE DESTROYED BY GOATS, SHEEP, HOGS, AND CRABS.

MR. EDITOR: I have been greatly instructed in a very important branch of industry, by the valuable communication of Col. McLEOD on the management of the *Turpentine Business of North Carolina*, and was much struck with the remarkable fact he mentions, of the destruction or disappearance of all the young growth, or rather the absence of young trees, of that kind.

Is it not worthy of inquiry, what can be the cause of it? To me it has occurred, whether it may not be caused by hogs or sheep, or both?—the hogs looking for and devouring the roots, and the sheep pasturing, perhaps, in the winter season, on the young trees that survive the ravages of the unclean beast? Were the whole forest of pine cut down and then succeeded by a different growth, it would excite no surprise, because we know that according to the laws and economy of Nature, growths of pine and oak, when cut off, are often succeeded by each other alternately. What is here hazarded as a mere conjecture will not seem so wild as it might otherwise do, when we look at what has occurred in other parts of the world; as, for example—

DARWIN, in his entertaining *Voyage of a Naturalist*—a good school-book, published by the HARPERS—in Vol. II. page 289, says:

“The history of the changes which the elevated plains of Longwood and Deadwood have undergone, as given in General Beatson’s account of the island, is extremely curious. Both plains, it is said, in former times were covered with wood, and were therefore called the Great Wood. So late as the year 1716 there were many trees, but in 1724 the old trees had mostly fallen; and as goats and hogs had been suffered to range about, all the young trees had been killed. It appears also from the official records that the trees were unexpectedly, some years afterward, succeeded by a wire-grass, which spread over the whole surface.* General Beatson adds, that now this plain ‘is covered with fine sward, and is become the finest piece of pasture on the island.’ The extent of surface probably covered by wood at a former period is estimated at no less than two thousand acres; at the present day scarcely a single tree can be found there. It is also said that in 1709 there were quantities of dead trees in Sandy Bay; this place is now so utterly desert, that nothing but so well-attested an account could have made me believe that they could ever have grown there. The fact that the goats and hogs destroyed all the young trees as they sprang up, and that in the course of time the old ones, which were safe from their attacks, perished from age, seems clearly made out. Goats were introduced in the year 1502; eighty-six years afterward, in the time of Cavendish, it is known that they were exceedingly numerous. More than a century afterward, in 1731, when the evil was complete and irretrievable, an order was issued that all stray animals should be destroyed. It is very interesting thus to find that the arrival of animals at St. Helena in 1501 did not change the whole aspect of the island until a period of two hundred and twenty years had elapsed; for the goats were introduced in 1502, and in 1724 it is said ‘the old trees had mostly fallen.’ There can be little doubt that this great change in the vegetation affected not only the land-shells, causing eight species to become extinct, but likewise a multitude of insects.”

The goat and the sheep resemble each other in habits and tastes. The sheep browses, we know, on cedar and pine, and these are considered so congenial to their health that watchful sheep-masters cause boughs of both to be placed in their way when otherwise they might not get them. In North Carolina, my impression is that *feeding sheep* is not in the agricultural catechism. The ground is rarely covered with snow, but when it is, occasionally, may not their flocks find a convenient and palatable resource in the young pine? I think it, however, much more probable that the *grunter* is the chap that does the most

* Beatson’s St. Helena. Introductory chapter, p. 4.
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mischief. Like some radical politicians, his propensities are subterranean; nor does the resemblance stop there; for both, when they get to the bottom of the best things, are very apt to *upturn and destroy them*. In one case, at least, the best remedy is, *a ring in the nose*.

Let not the reader smile in derision at the idea of forests of trees being destroyed by hogs. How much more numerous would be the growth of the oak, and the chestnut, and the beech, and the hickory, were it not for him and an ally, his antipode in taste and habits, the agile, cleanly and beautiful *squirrel*, destroying the nuts and acorns! But there are, Mr. Editor, many things in nature that "are not dreamed of in our philosophy." One must travel, if he would pick up information, and lay prejudice down in its place. On this subject of devouring the germs of trees and forests, what, gentle reader, would you think were I to tell you that on the Keeling or Cocos Islands, situated in the Indian Ocean, immense numbers of cocoa-nuts are destroyed by—*crabs*! On Keeling Island the *pig*, at once prolific and omnivorous, is the only domestic animal, and the main vegetable production is the cocoa-nut tree. On this tree the whole prosperity of the place depends. The hogs, "loaded with fat," almost entirely subsist on its nut, as do the ducks and poultry. "Even a huge *land crab* is furnished by Nature," says Darwin, "with the means to open and feed on this most useful production. The front pair of legs terminate in very strong and heavy pincers, and the last pair are fitted with others weaker and much narrower. It would at first be thought quite impossible for a crab to open a strong cocoa-nut, covered with the husk, but Mr. Liesk assures me that he has repeatedly seen this effected. The crab begins by tearing the husk, fibre by fibre, and always from that end under which the three eye-holes are situated; when this is completed the crab commences hammering with its heavy claws on one of the eye-holes till an opening is made. Then turning round its body, by the aid of its posterior and narrow pair of pincers it extracts the white albuminous substance. I think this is as curious a case of instinct as ever I heard of, and likewise of adaptation in structure between two objects apparently so remote from each other in the scheme of Nature as a *crab* and a *cocoa-nut tree*!"

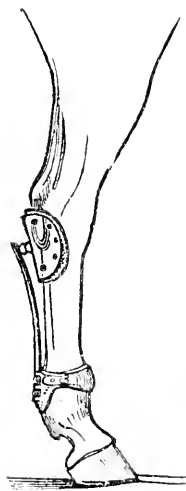
But if Nature has provided for all her living creations external enemies or internal seeds of destruction, is she not equally lavish in the means of distributing all organized beings over the face of the earth?—some carried by migrating birds, and others wafted by the ocean, without losing their power of germination, for thousands of miles! How boundless is the field she spreads before us for study and amusement! How innumerable the objects to excite our admiration of the great Artificer of all!

In regard to the progress of destruction, even to extinction, of some races of animals, and even of men, there is this reflection to be made, disparaging to the character and humiliating to our pride: that while other animals make war against each other, not in mere wantonness, but to satisfy hunger and sustain existence, it is not their *own kind* that they devour. It is only as a figure of speech, and to describe and denounce some horrible and loathsome action, that we say it was "dog eat dog" between them. But man's ingenuity, from the earliest annals, has been stretched to its utmost in devising infernal machines for the destruction of each other; and, alas! as if to put the seal of shame, not on man alone, but on the cause of civilization itself, the whitest and the most civilized, those on whom the God of all has shed in greatest profusion the light of science and the benign precepts of Christianity, have been the most distinguished

and successful in the career of rapine and extermination of their own species! Thus, wherever the more enlightened and polished European has gotten foothold, the aboriginal has fallen by his deadly weapons, like the trees of the forest before the ax of the white man. Those whom his violence has not exterminated, his contagious vices have melted away as snow is melted by the sun. Even now, on this "day of our Lord," and of the boasted progress of Christianity and Gospel light, see us—republican, *agricultural America*—self-imposing a tax of \$100,000,000, raising immense armies, and sending ships even round the Capes, loaded with *Christian* men, and all the engines of destruction, to conquer distant territories by fire and sword! from a poor, benighted, ignorant and distracted people. How much more magnanimous and Christian-like—how much more in keeping with the spirit of the age, and our boasted mission of liberty and civilization—how much more economical, in the fullness of our strength, to have forgiven them the debt! When will agriculturists, who ultimately pay all its expenses, take the government in their own hands?

CURBS.

AN APPARATUS EITHER TO GIVE PRESSURE, OR FOR THE APPLICATION OF TOPICAL REMEDIES, TO CURBS.



THOSE who were conversant with what was transpiring on the turf in the days of Black Maria, Shark, and other of the get of Eclipse, will remember how much talk and excitement there was about the supposed *tendency to curb*, on the part of the *Eclipse stock*. Several of his get were reported to have sprung a curb at very critical periods in their life and "performance on the stage."

The "Veterinary Record" gives the following article on the subject:

MR. ROBE: A curb is often viewed as a very simple affair by some persons, and it may be so to a horse used only for slow work; but to a hunter, during the season, it is of serious moment. The usual treatment for curbs may be said to consist in blistering and firing. Pressure, however, has been repeatedly suggested, and, on a horse of my own, I once endeavored to obtain it by employing sheet lead, and to some extent I succeeded. That the experiment did not succeed perfectly, I attribute to the difficulty I had of fixing any substance upon the hock-joint, and the object of the apparatus I now present to the Association is to overcome this obstacle. It is the invention of an old friend of mine, Mr. Aird, of Glasgow, a gentleman well known in the hunting-field. By means of this instrument he readily obtains pressure, and, as he conceives, gets rid of the lameness arising from a curb, without depriving the animal of that walking exercise which is so essential to the maintenance of a hunter in condition. The instrument almost speaks for itself: it consists of an iron plate curved in some measure to the form of the posterior part of the hock, and supported by an iron bar, which is attached to the plate by means of a hinge. The lower end of the bar is inserted into a strap, which is fixed around the inferior part of the metatarsal bone, and above the pastern joint. On either side of the plate there are holes by which it is fastened around the hock, and by which the pressure can be regulated. By inserting any substance between the joint and the plate, pressure to any extent, and equal on every part, may be gained; or, if this be contra-indicated, we are enabled to keep a wet sponge upon the part, or apply any agent we desire.

I think the invention merits attention; and I am assured by those who have tried this instrument, that by its use horses have been able to follow the hounds, which only a week before had sprung a curb. During the hunting season, therefore, its employment must be of service; but when the summer came, I should fire the horse and turn him out.

FAIR OF THE AMERICAN INSTITUTE.

As the interests of Agriculture, as well as manufactures and the arts, come professedly within the purview of the Institute, we may be allowed, without traveling "out of the record," to take some notice of its proceedings, in the sincere hope that they may conduce to obvious and substantial advancement in the sciences, and improvement in the arts, implements and machinery employed in the prosecution of American industry.

Their great annual exhibition has gone off with even more than usual *éclat* and satisfaction to the public and the friends of the Institute. Far from being put back any by the loss of its old theatre at Niblo's, the accommodations at Castle Garden seemed, as far as we could judge, to be peculiarly well adapted to a display of the endless variety of curious, highly polished and useful articles sent in for exhibition.

Judging from the number of visitors, said to have considerably overgone 200,000, the income must have been very large; of which the Directors of the Institute will take advantage, and make corresponding provision for bringing into play the inventive genius of the artisan, and the knowledge of the man of science.

To satisfy the enlightened and patriotic views of those who control the patronage of this popular establishment, it will not be enough that these exhibitions shall serve to bring together every year, at a given point, for the gratification of the thousands who come to admire them, vast collections of rare and beautiful commodities, which, with more pains-taking, might be seen in the shops and manufactories; their higher aim is to make these exhibitions answer to stimulate, to note and to reward only what constitute *improvements* in the trades, the arts, and the sciences applicable to the industrial pursuits, and calculated to augment the creative power and wealth of the nation. They design these exhibitions not so much to bring out repetitions of what has been already achieved in the structure of implements of husbandry, and the practical operations of Agriculture, in the work-shop of the artisan and the laboratory of the scientific investigator; but that they shall rather display the marks of all such recent improvements as may serve to indicate distinctly the *progressive advancement*, if any, which is going forward in any branch of national industry—taking special care to record and do honor to the *names* of those inventors and authors of improvements which entitle *them* to be known and esteemed as the *real* benefactors of their country.

Of what avail, say they, in a national point of view, and as promotive of yet higher improvements in the industrial pursuits of the people, to collect, year after year, from the workshops and factories of the city, the most finished and shining specimens of cutlery, of saddlery, and of jewelry—of tin-ware, of hardware, and of glass-ware—to display illustrations of all known machines, and samples of the most beautiful fabrics—to draw, as to one great museum, the most wonderful products from every kingdom of Nature, and the most curious inventions of civilized life, unless it be for the purpose of comparison, with a view to discover and proclaim how and wherein the mind, the Godlike part of our nature, has been at work to meliorate the condition of society, to manifest

the supremacy of the intellect, to display the inventive genius of our countrymen, and, by all these means, to confirm in them the sentiment of patriotism, and inspire the hope of yet higher renown for our once glorious country, in all the blessed arts of peace, and ways of true national glory.

Such being obviously the high aims of those who are invested with the management of this favored and popular institution—successful as they have been, to their hearts' content, in winning the universal support of the press, and in attracting the public countenance and patronage, from far and wide—we may venture the assurance that effectual measures have been taken to enable the anxious and patriotic inquirer to judge with some exactness, from systematic reports, *in what consists the real improvements* in the various arts and branches of industry, within the past year, as elicited by the high rewards and honorary encouragements of the Institute; and wherein there appears to be room and demand for the still farther exercise and application of ingenuity and science; for this, in short, creates the necessity for, and constitutes the usefulness of, all such institutions. To aim merely at getting up a glittering spectacle, and to draw a crowd, by factitious excitements, would be altogether unworthy the ambition of men whose days are devoted to the highest purposes that can engage the anxieties of the patriotic and the virtuous. With confidence, then, we may repeat the assurance that the public will be favored and enlightened by elaborate reports of men of high standing, of whom we have so many in all the walks of science and industrial pursuits, who are familiar with the existing state of the various arts and manufactures, and who can state, with precision and effect, as well the advancements which have been made, as brought out by the premiums of the Institute, and illustrated by these exhibitions, as those which are still needed, and may be hoped for.

The deliberate and careful reports (referring only to what is really new and useful) of such men, known and respected for their acquirements and judgment, and properly remunerated, (without which their labors could not be expected,) will command earnest attention, and do honor to us at home and abroad; and will convey far and wide through the press, and send down to posterity, information of ten thousand times more real utility than the mere exhibition, to admiring crowds, of the countless variety of beautiful articles that serve to make up such a show.

These reports, from Committees of disinterested scientific and practical men, will serve to advise the public whether what may have appeared new and beautiful to the uninitiated, is commended to public favor by anything truly original and useful in principle or quality, or whether it was a mere repetition of an invention, or duplicate of a manufacture, as old as the hills, and stale as a tale twice told. These reports, in a word, will serve to draw from their obscurity the names of modest and meritorious inventors, and men of exemplary perseverance in useful labors and researches, and to place them where they deserve to stand, far above those of the intriguing charlatan and self-sufficient pretender.

From what we know of the expanded views of those who regulate the affairs of the Institute, we cannot doubt that measures have been taken to give this useful and practical turn to their labors, and to secure for the indoor study and lasting benefit of its constant patrons such descriptive statements and reports in respect of every considerable branch of industry illustrated at the late Anniversary Fair, as will present a summary view of what has been accomplished in each department. The genius and ambition of our countrymen will moreover

be pointed to what remains open to be yet achieved, and on these reports schemes of prizes may be framed in the hope of obtaining the desiderata which may be thus indicated. We need hardly say that we shall learn and journalize with great satisfaction what these reports may disclose as indicative of progress in that most important of all industrial occupations to which our pages are devoted. It is not to be expected that the praises or premiums of a great National Institute will be bestowed on things with which the public is already familiar, and that possess not even the merit of novelty in quality or quantity to recommend them. True, the elephant can pick up a pin, but it rarely condescends to employ its colossal trunk for a purpose so little and so beneath it. In *Agriculture* we shall doubtless have a report, whether there be or be not any thing really new and more efficient in the form and structure of the plow, the harrow, the roller, the cart, the wagon, the threshing-machine, the flax-brake—in the machinery or the mill, to cut or to grind the grass or the grain of the farmer; whether there be any essential improvement in the appliances or principles for conducting dairy husbandry—any hope of any extended application of steam, or other artificial power, to lessen the cost or to economize the use of productions to the agriculturist, such as have been devised for the machinist, the manufacturer, the ship owner, and the merchant. We shall learn, and with pleasure treasure up, from these reports, descriptive statements of any marked melioration in the forms and properties of domestic animals by importation, or new discoveries in the art of breeding and the laws of animal physiology; and perhaps we shall hear that between honors and rewards which smaller institutions are unable to offer or bestow, some able physician or veterinarian, skilled in comparative anatomy, has been prevailed on to institute *post mortem* examinations of horses dying with the prevailing epidemic; and that remedies for or preventives against it may have been discovered by the agency and public spirit of an Institute *national* as well in its views as in its name.

We may have disclosed to us, as have been discovered by the rewards held out by similar national Societies in England, what new manures have been compounded, and what new rotations have been tried, producing better and more ameliorating and profitable results for the farmer and his estate.

At one result of the growing popularity of these Fairs, we may be allowed particularly to rejoice. It will enable the Trustees to indulge their well known desire to put in requisition the best talents of the whole nation, by offering large and liberal rewards for essays on important subjects and branches of national industry and useful science, and such as in their nature require for their elucidation, a range of scientific knowledge which comparatively but a chosen few possess. We may be well assured that a Committee of able and scientific members will be detailed to consider with care what subjects we most need to have investigated as connected with the progress of the arts and the advancement of all the industrial pursuits of which it professes guardianship, and whose fruits it displays; and that, if their funds will admit, they will offer, at the option of the winner of the prize, either the money or plate of value sufficient to prompt our ablest professors of entomology, of agricultural chemistry, of botany, and other natural sciences, to enter the lists. But we are too apt in our country to expect men of science to Grahamize themselves down so far as to live on bran bread or barley gruel and to work for nothing. Such men as Silliman, and Renwick, and Mapes, and Emons, and Smith, and Ruffin, are expected at the beck and call of Tom, Dick and Harry to classify insects and plants, and to analyze soils, and to examine and label

minerals, as if they were not entitled to be paid for the use of their knowledge as much as the lawyer for his brief, the doctor for his prescription, and the carpenter for the exercise of his trade. The officers of the Institute have a great and glorious duty before them—the highest, the most noble of all enterprises—that of undertaking and being invested with means and authority to *augment knowledge* and extend the horizon of the sciences, and to prompt, to note, and to proclaim advancement in all the arts conducive to individual comfort and prosperity and to national glory. Such is their sacred trust. They will stand up to it with an honorable and elevated ambition, and while all pecuniary considerations and all thoughts of accumulation for the sake of enriching the Institute, except in the elements of usefulness, will be put behind them with disdain, they will seize with alacrity every chance of expending to the utmost farthing in their power, to elicit and bring forward the latent resources of their country, and to throw light upon every branch of useful industry embraced within the range of their promises. They themselves, while they devote their time with enthusiastic ambition to the great objects of the Institute, should be not well, merely, but liberally paid, which we understand they are not. We believe that Mr. Chambers, the amiable and assiduous Librarian or Assistant Secretary, who gives all his time to the institution, gets but \$500 or \$600 a year, whereas such labors and devotion are entitled to not less than double that amount; and for men in the position of the vigilant and indefatigable Wakeman and the Recording Secretary, with his various and remarkable acquirements, no men acting in their functions, and qualified to appreciate and forward the comprehensive and elevated purposes of a great national establishment, ought to receive less than the officers of a professed moneyed and money-making institution. We know not what their compensation is; we only mean to speak in behalf, and to assert the rights of *intellectual labor* honestly and with pure ambition devoted to great public uses. The only security for a Republic is the virtue of its citizens; the only solid foundation for virtue is knowledge: *argal*, then, as the grave-digger says in the play, let knowledge, above all things, be sure of encouragement and suitable reward.

MR. STEVENS'S ADDRESS AT AUBURN.

WE the more regret not being able to hear Mr. Stevens's Address at Auburn, since we have seen a brief sketch of it in the *Cultivator*. We felt every assurance that it would be worthy of the orator and the great cause he was called on to advocate; and truly rejoice to see that he struck the right nail on the head—*Education with reference to agricultural pursuits!* It is as remarkable as it is gratifying, to see that this is now the view which all the Annual Addresses are presenting. Schools, too, are springing up, almost without adequate preparation, to meet the pressing call of public sentiment. We hope to publish an account of Professor Lee's and others in our next.

The ball is in motion! Let its motion be accelerated by every paper, and every patriot in the country, until the Representatives of the agricultural interest in Congress, shall not dare give one dollar specially for any other sort of instruction, or for collecting any other sort of information at the common expense of the people, without distributing dollar for dollar for agricultural education. Yes,

the ball is in motion : the signs are as plain as the Great Bear in the heavens. But Rome was not built in a day.

In our next, if we have time, we will give the sketch of a Memorial, to be addressed by the farmers of the United States, and especially by Agricultural Societies, to the Legislatures of the several States, calling on them to memorialize Congress for a share of the proceeds of the public lands, for the diffusion of agricultural knowledge in each of the States. We invoke the aid and counsels of the friends of the plow, of *all parties*. As for a great "Agricultural Department" at Washington, it sounds very well, but will never come to a practical head.

THE AGRICULTURAL FAIR AT NORTHAMPTON.

WE have no room at command to give even general accounts of the numerous Agricultural Fairs which have just passed by. Of two of them—the one at Northampton and the one at Worcester, Mass.—the Editor might be expected to say something from personal observation, as in regard to each he might say, *pars quorum fui*—however humble that part was.

Some general remarks have been made upon the Worcester Show, in the way of information, in quarters where it may be desired to get up such exhibitions of agricultural and of domestic industry. The Fair occurring there a week sooner than at Northampton, left us time for these remarks, while none remained for any description of the Fair at Northampton. In reference to this, we can only quote the remark of the Northampton Democrat, which, after a vivid description of the storm the night before, and the apprehension of its effects on the Exhibition, says: "The days on which it occurred were, for the most part, uncommonly pleasant for the season, and the town was literally filled to overflowing with the people who came to enjoy the festivity. The Fair, and the cattle, and the horses, are said not to have been equal to the exhibitions of last year, but all the adjuncts to this festival were fully equal to whatever has been here on other similar occasions."

In the next number of this Journal, we shall so far depart from the practice of omitting particular Reports—a practice imposed by necessity rather than by choice—as to give, in the LADIES' DEPARTMENT, the Report on DOMESTIC MANUFACTURES, from the pen of Mr. GORHAM, and perhaps some others. In what has been said under the head of "Agriculture in Massachusetts," it will have been seen that the Societies on which are bestowed the patronage of the State are required to send in the Reports of their Committees to the State Department.—From these reports, "Abstracts" are to be made by the Secretary of the Commonwealth, of such parts as appear to deserve particular attention and distribution. These reports, being thus written under the knowledge that they are liable to be published, may be supposed to be drawn up with somewhat more than ordinary care; but for this, in most cases, too little time is allowed—as at Worcester particularly, where the whole Fair must be arranged and disposed of in a single day.

It may be worth while to advise the patrons of this Journal that we shall be regularly supplied with these "Abstracts" when published, when these will be again sifted, and such parts given to our readers as may appear to be of greatest importance and most general applicability.

A PLEASANT VISIT TO AN EMINENT FARMER.

From the Saratoga Republican.

A VISIT TO THE PRESIDENT OF AN AGRICULTURAL SOCIETY, WITH AN ACCOUNT OF WHAT OCCURRED—INTERSPERSED WITH SOME REFLECTIONS BY THE NARRATOR—ALL CONTAINED IN TWO LETTERS, OF WHICH THIS IS

No. II.

NUMBER I. having already appeared, excuse me, but “I like to be particular, Mr. Editor—and now as to his sales. Col. C., President of the Agricultural Society of ——— county as aforesaid, from his little farm of 100 acres, of which 20 are in wood, sells some hay, some pork fattened on cooked potatoes and meal, gradually diminishing the proportion of the former, until the unclean non-chewing beasts are nearly ready for the sacrifice, when the potatoes are entirely withdrawn, and the king of grains, the pride of our country, entirely supersedes them.* He sells some butter at never less than a shilling a pound, at the village of “Sarritog,” as the country people hereabout call it; some poultry, and divers other odds and ends, too tedious to mention: therein acting on the maxim of Poor Richard that “every little makes a mickle.” And furthermore, according to the saw of the same sage economist, so says Mr. C. “if you would have a *faithful* servant, and one that you like, *serve yourself*.” Hence it is, that he has no servant of any sort about his house. His thrifty wife cooks, washes and mends, and performs with untiring diligence the household duties, that her husband “may be honored as he sitteth at the gate among the elders.”

If the house is homely in its exterior, the inside was all neat and “in order.” There were shelves in one closet loaded with beautiful cheeses, and in another bending under the load of the nicest patch-work quilts, and counterpanes, and house linen for every use, and as white as the driven snow.

“As huswives keep home and be stirring about,
So speedeth their winnings, the year throughout.”

Wondering how he could get from his only twenty acres of wood an adequate supply of fuel for this northern climate which locks up the earth and covers its bosom with frost and snow during five months of the year, he showed his visitors that he kept but one fire going generally, and that in a stove that served at once for cooking and warming. The fact is, Mr. Editor, that men who are ever at work rarely suffer with cold, and Mr. C. is one of those who handles his tools “without mittens,” remembering Poor Richard says, again, that “the cat in gloves catches no mice.”

With a provident economy characteristic, not so much of himself as of the country to which he belongs, this side of the Potomac, while content to put up a little longer with his old mansion, Mr. C. had built himself a capital barn, which was as “full as a tick.” Its ample dimensions and convenient arrangement, affording shelter and security to his crops, his implements, his cattle and manure—except that, as before stated, his increasing stores have this year swelled beyond calculation, and his hay is some of it stacked in the field.

There is one thing observable to a southern-bred farmer here, as throughout this State: Their *worm-fences*, made with rails, much longer than in the South, are generally not more than 6 or at most 7 rails high, and scarcely anywhere secured by stakes and riders. Such fences in the South would be considered a temptation rather than a barrier. Hence it is undoubtedly to be inferred that the cattle are of more docile and peaceable temper: and it may be worthy of inquiry, whether these qualities be not transmissible? May it not, in fact, be

* It is time we had given a name to this noble grain—an American name. Note, for instance, what it was called by the aboriginal owners of the country, whom we robbed, as the strong will always rob the weak, and when they won't submit, the usual expedient is to *knock out their brains*! Indian corn is no name at all! Neither is the Greek name *Maze*. The Indians call it ‘*mote*.’ [Ed. Form. Lib.

doubted whether the progeny of these cattle, if transplanted to the South, and there kept beyond the contagion of bad example—for with *all* animals “evil communications corrupt good manners”—whether, I say, the progeny of these cattle would not retain the quiet and unobtrusive disposition which restrains them from walking, as southern cattle would, over such fences: or is it that in the more scanty pastures of the South hunger sharpens their faculties and causes them to “break in and steal?” The inquiry is worthy of the philosopher and the naturalist, with some of the most inquisitive of whom, I am disposed to admit, that with the dog and other domestic animals particular propensities and obliquities of temper and character are as inheritable as physical conformation and diseases of constitution. “Thou shalt not muzzle the ox,” saith the Scripture, and these northern farmers seem to understand it in the management of their cattle.

Of the education of his children, (and at the very thought of it I cannot but pause to contemplate the *almost awful responsibility of parents on this point*,) Mr. C. spoke as he acts, with becoming solicitude. His daughter was out now to a better school than common. All his family assist in milking and in all the operations of the dairy, *churning* being his own work in that department. Speaking of his daughter's education in household duties, and evidently as if he considered it one of its important degrees, he said she was now “beginning to bake!”

For his land he would not take \$59 per acre.

An interesting fact, as connected with the dietary and economical habits of the northern farmer, and which may be well applied to illustrate the question of positive and comparative consumption of meat by different classes and different parts of the country, he said that for the use of his family, including an extra hand hired on emergencies, he retained only the three smallest hogs in his pen, weighing about 200 pounds each. This would be 600 pounds, equal to not more than 500 weight of cured bacon: and for not less than six persons, being not over two pounds per head per week.

Thus, sir, considering how much more meat nature demands in northern than in southern climates, may it not be assumed as a fact, in our agricultural and household economy, that *two pounds* of meat per head per week is the average and sufficient consumption of the white rural population of this country, where bread is eaten *ad libitum*, with the addition of milk, vegetables, eggs, poultry, fruit, &c., to be had in the country everywhere. I have long been of opinion that it may be so considered, but the problem is worthy of more exact solution by statesmen and political and agricultural inquirers.

If any one is curious to see a *flail*, he may be gratified by a visit to this well-stored barn of Mr. C., whose philosophy for persisting in the use of it is, that it gives employment to poor men, who in the absence of work would have to be supported “any how.” I have not time to go into the calculation, how much is won or lost by the use of it, and doubt if he has done it; for, strange to say, let me repeat, few farmers in this vicinity *keep accounts*. This calculation would require that note be taken of the cost for getting out grain per bushel in this way as compared with more expeditious processes; and how much is gained in the value of the straw, *where that is sold off the farm*. For this there may be ready demand at Saratoga Springs. But the practice of selling *anything off a farm* that may be converted into manure on it, is always a doubtful and suspicious one, and he who does it ought to be held to a strict accountability to prove that it is not wasteful, especially where he is within striking distance of an available market for milk, and butter, and veal, and meat of every sort; and yet more especially when the farmer happens to be the *President of an Agricultural Society*. Be all this as it may, let it be known that Mr. C. depends on the slow and hard knocks of the flail to get out his grain. True, his crops are not large, from so small a farm, and might not justify the use of more expensive machinery. The motive he assigned was one that does honor to his heart, and it may be to his judgment, which in his general management is practical and sound.

These are the subjects that *Agricultural Societies* ought to investigate, instead of directing all their energies to some old, everlasting, stereotype questions, as—*How much corn can be stuffed into, and how much fat be laid on a bullock or a hog?* or, for the ten thousandth time, *How much corn can be made to grow on an acre?* One fact was disclosed in the course of conversation with this gentle-

man, who may be cited as a model of his class of intelligent, upright, independent working farmers, a fact which he related with evident chagrin and regret, to the disparagement of his township; and I confess I heard it with surprise, not to say disgust—for the whole township of Saratoga, containing 652 voters, of which one-half are farmers, only six practical farmers—recorded be their names! Chapman, Wilcox, Olney, two Caldwells and Holmes—can be found to contribute as members of an Agricultural Society, to which the annual contribution is but *fifty cents a year!*

It seems that the State divides \$10,000 annually among all the counties—\$120 being the maximum allowed to Saratoga County, and that only on the easy condition that it raise among its 5,256 practical farmers the like sum of \$120—less if it raise less—and to make up this appalling sum (not three cents a head), only six can be found in Saratoga township to join the Society, on payment of *fifty cents!* “Tell it not in Gath! publish it not in the streets of Askelon!”^{*} Is it, sir, to be wondered at that a class of people so insensible, so dead to the advantages of association of mind and means for the exchange of information, and co-operation for the improvement and protection of their common interests and professions, should see the landed interest made a stalking-horse, as it ever has been, on which all others do ride?—that it should pay annually many millions for the dissemination of *military* knowledge, and for providing the art and the means of manslaughter?—for the establishment of arsenals—the building of armed ships and fortifications—the opening of *military* roads—the manufacture of guns and all the implements and munitions of war and destruction?—that it should pay \$400,000 a year for military men “*waiting orders*,” while not a dollar can be had to open a canal or remove a bar—no, not to make *one* link to fill up a gap in a chain of 2,000 miles of railroad, for the transportation of agricultural productions, nor a single dollar for *agricultural academies?*

But why dwell on the fatuity of men who stand thus in their own light—doomed to be forever used and abused by the selfish and the cunning, as assuredly the men will be who prefer base lucre to knowledge—who, instead of imploring knowledge from the God of light, worship mammon as the heathen worshiped the golden calf. It is only when we hearken to the injunctions of Solomon—“Wisdom is the principal thing, therefore get wisdom,”—that the day of redemption shall come for Agriculture, and the farmer shall cease to be, as he has ever been—a “hewer of wood and drawer of water” for other classes of society.

Throughout this country it strikes me there is one defect in the domestic management, about which public sentiment requires to be put right. Parents, with the best feelings, are too grudging in the time which they allow to the education of their sons! True, it is the well-grounded boast of all New-England that every mother's son can “read, write and cipher;” and in this, *merely*, the education of the masses too much and too often consists; but this is by no means sufficient to qualify the man, the would-be freeman of the country, to understand what belongs to his profession as a man, or to himself as a freeman. If reading and writing only do not come “by nature,” as Falstaff says, they are not of themselves sufficient to a vigorous and comprehensive understanding. In Georgia, and other Southern States, you may find many men who cannot tell “B from Bull's foot,” and who yet possess a natural quickness of comprehension, a sort of practical sagacity, sharpened by thought and experience, that qualifies them to rough it, and go ahead in the world, in advance of him whose chief acquirement and dependence has been to boast that he could “*read, write and cipher.*” These simple acquirements are usually made in a few month's schooling in dead winter time, under instruction of men too often not well qualified, because, for one reason, their occupation is not *respected or remunerated as it ought to be.* The moment the frost rises out of the ground, even before the buds begin to swell under the genial warmth of the vernal sun, their sons are withdrawn from school, to assist on the farm. Their books are consigned to dust and cobwebs; and the hoe and the plow take their place, until grim-visaged Winter returns again to

* The voluntary Mercantile Association in New-York has provided for those who follow commerce for a livelihood a library which already numbers *twenty-four thousand volumes!* How many volumes are owned by any Agricultural Institution, or Farmers' Club, in America?

[Ed. Farm. Lib.

lock up the bosom of the earth : and even this schooling is not long continued, only until they can "read, write and cipher."

Does not this explain some things so disreputable to the agricultural community of this State ? Look at the Convention now (August) in session at Albany ! How is it composed ? Look at the classes represented, and the amount of their productive labor ! There are in the State 253,292 *agriculturists*, 125,000 *mechanics*, 13,000 *manufacturers*, 20,000 *merchants*, 3,549 *lawyers*, and 4,610 *doctors*. Now look at the value of their productive industry ! That of Agriculture is \$108,000,000 : of manufactures, \$50,000,000 : of commerce, \$24,000,000 : the lawyers' income, which must come out of *somebody*, at \$600 each, is \$2,129,000 : the doctors', \$2,756,000. Now look at the power in this Convention for fixing the *organic law of the State*, as exercised by these several classes of society !—Of farmers there are in the Convention 50 : of lawyers, 47 ! doctors, 8 ; mechanics, 8 ; merchants, 12. If there be any virtue in the fundamental representative principle of our Government, does it not require that the representative should reflect, as nearly and fully as possible, the interests of the mass of his constituents ?—and does anything but the disreputable neglect which has attended the education of their sons, who were to follow their fathers' occupation, drive the agricultural community to look, in such great and unreasonable proportion, to other classes and professions, for men to represent them in the great and responsible trust of *law-making* !—in delivering lectures at agricultural fairs, and, in fact, on all occasions where there is to be an exhibition, or a communication of anything more than the most ordinary intelligence ? This resort to other professions proceeds, it is true, not *always* from deficiency of knowledge, or of power to communicate it, but sometimes from an unmanly self-distrust, and disparagement of their own profession, or from want of due discrimination between what is really useful and practical, and what is superficial and flowery.

At a certain meeting of farmers, during the session of the American Institute last autumn, we happened to be present and to witness somewhat indecent impatience, while a plain farmer of Delaware was "giving in his experience," every item of which was suggestive of solid information and useful facts, but without ornament or flourish. Those who undervalue their own calling and their own associates are not likely to be exalted by others. It's an old saying, as true as it is trite, that "it's a dirty bird that fouls its own nest."

It is not meant, by anything here said, to detract from the legal or other "*learned*" professions," since they alone, and *par excellence*, must still be called *the learned* ; on the contrary, *nobody* knows better than *Nemo* that there is something in their training, and course of reading, which enlarges, as all knowledge does, both the understanding and the heart : and hence has it been that history places high among the great votaries and martyrs of liberty, in all countries, men of the learned professions and of the most finished education ; and that probably not so much from anything peculiar in the nature of these professions themselves, which does not equally belong to other callings—to Agriculture, to commerce, and to mechanical pursuits—but because those who follow them *are* the most *learned*, and may be expected in their lives to exhibit, especially in all great crises, the truth of the French motto, "*le savoir est puissance*,"—*knowledge is power*. Such men will rise to the surface and take the lead—just as, in the prairies, the horse of exceeding strength and spirit takes the lead alike in love and in war !

It will only be when farmers are equally well educated that their power in the management of public concerns—in which they have, by all odds, the greatest interest—will bear anything like a just proportion to their numbers, to the products of their labor, and to their contributions to the public treasure. If now American farmers were so represented in Congress, how much greater would be their direct influence in public affairs, and their share of the public patronage ! Under the effect of better education, their influence would rise like the mercury when the thermometer is plunged into water at blood-heat.

The father can so nicely calculate the money value of the son's labor, even by the day and the hour, that he abridges too much his chances of having his mind fairly opened to the light of science as connected with his calling. He lets him not drink deep enough at the Pierian spring to get fairly inoculated with the love of knowledge *for knowledge's sake*. One year more, at that critical season of

life when the character is taking its set, under competent and high-spirited instructors—proud of their profession, from consciousness of the importance attached to it, and the enjoyment of the respect to which it is above all others entitled—would so imbue his son with the love of books that he would never be cured of the holy thirst for the knowledge and the entertainment they contain. They would be his readiest and best companions in the many leisure hours incident to every condition of life, and his stead in hours of confinement and sickness. To them, instead of the dice-box or the bottle, or idle and frivolous conversation, he would turn as the best refuge against the pains of indolence, and the dissipation to which indolence drives men as against that which is worse than sickness or the sword. With an increased love of books, which this much more insight into books of a proper character would give, all opportunities of intellectual improvement would be seized upon with avidity. In a word, our whole population, as a mass, would be elevated in useful knowledge and a just apprehension of their rights. Demagogues of every party would be banished from the public councils, and legislators would willingly, or be forced to, respect the interests of Agriculture, as the primary interest of every country; and you would not find any man so poor, so penurious, or so benighted as to grudge 50 cents to sustain an Agricultural Society; and the landed interest, instead of being kept down at the foot, would be placed at the head of all public concerns in the esteem of the people, and the care and consideration of Government.

NEMO.

P. S. Let me give warning, Mr. Editor, that these Saratoga farmers had better "keep an eye to windward" next summer. There may be a "chiel among 'em takin' notes," when they little dream of it; and if their good housewives will only give him a bowl of fresh buttermilk, he will teach them how to raise ducks, and "no mistake!"

SILLIMAN'S AMERICAN JOURNAL OF SCIENCE AND ART.

OF this profound work of science, with which we are regularly favored as it appears, we can only say, that it has served at once to do honor and disparagement to the country—honor, in showing that we have men of genius and acquirement employed with ardor and the most disinterested and honorable ambition in exploring and laying under contribution the various kingdoms of *useful knowledge*; while the limited patronage it has received heretofore has cast discredit on the country. The able Editor must look for requital in the approval of men of learning abroad yet more than at home, to whom his labors have made his name familiar, and to the consciousness of his own high and generous purposes.

RAVAGES OF THE CATERPILLAR ON THE COTTON CROP.—We have received a letter from a friend in Tchula, (Miss.) dated Sept. 28, 1846, from which we learn that

"The most remarkable event of the present year, with us, has been the appearance of the caterpillar among the cotton. This visitation has, I believe, been universal over the cotton region, and united with the previous rains, has done immense injury. The crop will undoubtedly be a shorter one than has been known for many years. You could scarcely credit, without actually witnessing, the effect of this enemy to the great staple of our country. I do not think I speak rashly, or far from the truth, when I say there is not a cotton leaf to be found in the country. The fields present the appearance of having been burnt over, and look like old sedge fields. They have destroyed all the latter portion of the crop. I trust the price will in some measure compensate the planter for the deficiency."

CULTURE OF BARLEY.

[The following information on the culture, uses, product and value of Barley, as compared with other grain crops, it will be seen was given at the request of the Editor of The Farmers' Library.]

AUBURN, N. Y., September 15, 1846.

Dear Sir: The various injuries to which the wheat crop is obnoxious in Maryland has set some of the best farmers there to casting about for a substitute less liable to the ravages of insects and the casualties of the seasons. Some think of having recourse to barley as the most promising alternative, and, being almost destitute of practical experience, have requested me to obtain for them the best information from persons most conversant with its culture in this State, where it seems to constitute an important staple in your system of husbandry. I pray you, therefore, to excuse my asking you (being persuaded that much practice, with your habits of close observation, has made you familiar with the subject) to give me information on all the points upon which you may suppose a farmer would desire to have light, who is altogether in the dark—as, for instance, in respect to the kinds of barley, the time of sowing, and quantity to the acre—the kind of land (and preparation thereof) best adapted to it—whether or not it serves well as a protection to a grass crop, or whether it is not liable to injury, or to much difficulty in the process of curing, when used as a covering to grass. Do you find it nutritious and commendable as food for stock, and for stock of what kind? and how prepared when so used? What is its usual product per acre (and its price) as compared with wheat, corn and oats?

My own ignorance of the subject, and the haste with which I write, may have led me to overlook some points material to a thorough understanding of the culture and economy of barley husbandry; in which case, I beg you to supply what may be needful to a full development, for the benefit of gentlemen who, as I can confidently undertake to say, are not given to hiding their own lights under a bushel, when the communication of anything they know can be useful to their brother farmers. If you could conveniently furnish me with such reply as you may be kindly disposed to make, within the first week of October, you would greatly oblige

Yours, with esteem and respect,

J. S. SKINNER.

To H. S. RANDALL, Esq.

CORTLAND VILLAGE, N. Y., September 26, 1846.

Dear Sir: I employ my first leisure in answering your inquiries on the subject of barley and its cultivation.

1. *Varieties.*—Barley (*hordeum distichum*) is of two general varieties, known as winter and spring barley. The former is not cultivated in this State, that I am aware of. It is said to be easily winter-killed; but on lands which are kept constantly covered with snow until the beginning of warm weather, or on those which are not subject to freezing and thawing in winter and spring, it is better and produces heavier grain than the spring variety. It can be harvested in time for a second crop of spring barley, in favorable situations.

Spring barley is subdivided into the Siberian, skinless, sprat, chevalier, etc.; but the two varieties most commonly known and cultivated are the “six-rowed” and the “two-rowed.” The six-rowed has three seeds united at the base, at each joint of the *rachis*, on each side alternately; the two-rowed has but one row of seeds on each side of the *rachis*. It puts forth three flowrets on a side, at each joint, like the preceding, but the outside ones are barren. The “four-rowed” is but a deviation from the six-rowed.*

There is but little difference in the yield of the six and the two-rowed. The former is about a week the earliest, and, for reasons which I am unacquainted with, usually is quoted two or three cents higher per bushel in the New-York market.† Both bear the same price in the country markets; if there is any differ-

* The varieties of barley will be illustrated when we come to that subject in the republication of Stephens's Book of the Farm.

† Some experienced manufacturers say that there is, perhaps, no intrinsic difference in quality, but that the two-rowed requires more time and care to extract thoroughly its qualities. [Ed. Farm. Lib.

ence, the two-rowed is preferred, it being the largest and plumpest grain. No difference is perceptible in the varieties as food for stock. The two-rowed is much the most generally cultivated in this region.

2. *Time of Sowing*.—As early in the season as the ground can be got into proper condition, is with this, as with all the other cereal grains, the best time for sowing. The early crops are almost invariably the best. Barley, however, requires that the ground be in a dry, mellow condition at the time of sowing. It will do to sow it late—as late as oats—with no greater depreciation in the crop than follows the late sowing of the latter. It is customary with our farmers to get in their spring wheat first, barley second, and oats third.

3. *Quantity of Seed Sown*.—Full three bushels are required to the acre. Of the two-rowed, the grains being larger, I sow at least three bushels and a peck.

4. *Kind of Land adapted to it*.—Dry loamy or gravelly soils; but it will flourish in any of our loose soils which are sufficiently rich and dry. It fails on stiff clays, and on all wet, cold lands.

5. *Preparation of the Soil*.—It requires about the same preparation, by plowing and harrowing, as spring wheat. It requires land, too, as rich as prime wheat land. On poor and worn-out soils, oats are more profitable. It has one peculiarity which distinguishes it from all the other cereal grains: it will yield well, and the ears will fill, on highly manured lands, on which the others would run to straw, fall down, and entirely fail to fill. Barley, under such circumstances, will fall down, like the other grains, but the ears will fill when it is lying nearly flat on the ground. I always have it, therefore, follow highly manured hoed crops, in my rotation. I frequently apply sixty two-horse loads of manure to the acre for turnips. If I follow them with wheat, it always fails; and it would require no experiment to demonstrate the folly of sowing oats under such circumstances. Barley will generally fall down, but I have raised sixty, and even more, bushels per acre on soils in that condition. This year I had a small patch of it mixed with flax, on excessively manured land adjoining a barn. The growth was extremely rank, and a whirling wind threw it down, and twisted and tangled it in a manner I never before saw equaled, about the time the grain began to set.—While this went on ripening, the roots put out a new set of shoots, which stood up. At harvesting, the first heads were full of fine plump grain, and the barley, though much smaller, was sufficiently advanced to cure, on the second growth.

6. *As a Covering for Grass*.—It is generally preferred, by those who cultivate it, to any other crop, for this purpose. I have never had my grass seeds fail with it.

7. *Liability to Injury*.—It is less liable to injury than any other grain crop with which I am acquainted. Its tendency to fill, when down, has been alluded to. No insect enemies have yet attacked it, so far as I am aware. I have never known it to rust, though oats are very prone to on my lands. It has a remarkable power of resisting drouth. Its greatest enemy is continued rainy, warm weather, at the time of harvesting. It sprouts readily after it is cut, which seriously injures the grain. I have known crops of it injured in this way, though I never had one of my own thus injured, nor do I think it very necessary.

8. *Difficulty in the Process of Curing*.—It cures with as much facility as any other grain, and is cut with as little labor, when taken in season. It should be cut when the kernels are in a doughy state, and while the straw is somewhat greenish, and stands erect. Left until dead-ripe, the straw “crinkles,” and is cut with more difficulty, and the grain shells out in handling it. When it stands, it is cut with the cradle, raked and bound, exposed in shoeks (where two rows are set up loosely together, without any cap) for a day or two, and then carted in. If the straw is green, it is generally left a day or two in swath, before binding; but care must be taken that it does not cure too much, on account of shelling. If the crop is down or “lodged,” it is cut with a scythe, suffered to lay on the ground a day or two, raked into swaths and cocked like hay, or, if already dry enough, carted in. It may be raked with a horse-rake, if not too dry. This is a cheap way of harvesting barley, but it is liable to the objection that the unbound straw takes up an entirely disproportionate amount of barn-room. It is also difficult to stack it unbound, the straw being short and singularly “slippery.”

9. *Its Value for Feeding Stock*.—According to the careful experiments of Thaër, the comparative values of wheat, barley and oats, in feeding cattle, are

represented by 47, 32 and 24, the *measure* being the same. It is considered by our farmers, by measure, to be about half way between oats and corn, in its nutritious properties—perhaps rather nearer the corn than would be indicated by such middle point.

I have fed it to all kinds of farm stock, and like it for all, excepting carriage-horses. For these, oats are preferable. But for draught-horses, oxen, cows, young cattle, sheep and swine, it forms an excellent feed. I prefer it to corn for draught-horses, and also for other kinds of stock, excepting swine, where the object is not directly to fatten for slaughter. I prefer it, because I consider it less stimulating and less cloying. For fattening swine, nothing can exceed corn; but barley is beginning to be used quite as generally for that purpose in this region. Very fat hogs eat it better toward the last than they do corn. No difference can be detected in the pork made from the two grains.

10. *Preparation*.—It should be ground for all kinds of stock. Some soak it soft and feed it unground, but it is poor economy. The meal is fed dry to horses and sheep; mixed with water or milk, and fermented until it acquires a sweet taste, to swine; and either dry or cooked, to cattle.

11. *Product per acre and Price compared with other Grains*.—In my answer to Mr. Walker's "Treasury Circular" (in 1845), I submitted the following tables, which I believe to be essentially correct, and which include most of the information you desire under this head:

| GRAINS. | Cost per acre. | Average number of bushels per acre. | Average value of stalks or straw. | Total value, estimating grain at average prices for the last five years. | Net profit per acre. |
|-------------------|----------------|-------------------------------------|-----------------------------------|--|----------------------|
| Indian Corn..... | \$15 | 30 | \$5 00 | \$20 00 | \$5 00 |
| Spring Wheat..... | 9 | 12 | 1 00 | 12 40 | 3 40 |
| Barley..... | 9 | 28 | 1 25 | 13 29 | 4 29 |
| Oats..... | 7 | 38 | 1 25 | 10 18 | 3 18 |

AVERAGE PRICES OF GRAINS FOR FOURTEEN YEARS.

| YEAR. | Wheat. | Ind. Corn. | Barley. | Oats. | Buckwh't. | Peas |
|------------|--------|------------|---------|---------|-----------|---------|
| 1832..... | \$1 12 | \$0 56 | Cts. 65 | Cts. 35 | Cts. 44 | Cts. 60 |
| 1833..... | 1 12 | 56 | 65 | 38 | 44 | 62 |
| 1834..... | 1 06 | 62 | 60 | 37 | 40 | 62 |
| 1835..... | 1 25 | 69 | 75 | 38 | 56 | 75 |
| 1836..... | 1 38 | 87 | 75 | 40 | 50 | 75 |
| 1837..... | 2 00 | 1 00 | 75 | 44 | 62 | 80 |
| 1838..... | 1 60 | 88 | 70 | 42 | 50 | 75 |
| 1839..... | 1 50 | 80 | 62 | 38 | 50 | 62 |
| 1840..... | 1 25 | 62 | 50 | 30 | 38 | 50 |
| 1841..... | 1 07 | 62 | 50 | 28 | 38 | 50 |
| 1842..... | 1 06 | 60 | 45 | 25 | 38 | 50 |
| 1843..... | 88 | 44 | 40 | 20 | 31 | 40 |
| 1844..... | 85 | 44 | 40 | 20 | 30 | 44 |
| 1845*..... | 90 | 50 | 40 | 25 | 31 | 40 |

* The prices of 1845 estimated up to the 15th of October.

It will be understood that the average product above stated includes every variety of land and cultivation. My own crops of barley have averaged not less than 38 or 40 bushels per acre for ten years, and I have raised 65 bushels per acre in some cases.

12. *Miscellaneous Remarks*.—Having replied to your questions *seriatim*, I will, in pursuance of your request, make such other suggestions as occur to me, which I think would prove useful to those unacquainted with the nature and culture of barley.

Climate.—Barley is cultivated and comes to perfection in a greater variety of climates than any other grain.

Mixing it with other Crops.—The two-rowed barley is frequently sown mixed with oats, and in some instances with flax. I have tried both. They do very well together, but on the whole I prefer separate sowing.

Effect of Barley on Soils.—Barley is generally considered a less exhausting crop than oats. Such is my impression, but I am not able to adduce any decisive proof.

Barley Straw.—If the barley is cut quite green, and the straw is cured so that a considerable portion of it retains this color, it is eaten by cattle, in cold weather, almost as readily as hay. It is softer than the other straws, and is much more readily eaten by all kinds of stock, where the process of cutting is not resorted to. I usually cut my oat straw for my horses; I feed the barley straw uncut to my cows. For two winters, it has been my custom to give the latter two feeds of barley straw a day, and one lightish one of hay, with a feed of from six to eight quartis of turnips. They will do as well on this as on a full supply of hay, and it is much cheaper. I have also fed barley straw without hay, giving turnips, or a little barley meal. Either way is cheaper than wintering on hay exclusively, and with proper management will do as well.

Barley in the Rotation of Crops.—It is customary among the best farmers in this region, to take but three grain or root crops before seeding down. The first is generally a hoed crop, on good soils, viz., corn, potatoes and turnips. The first crop receives all the manure. Where the manure is not applied very plentifully, wheat is often the second crop, and barley or oats the third, with grass seeds. But it is common, with many (who make large quantities of manure), to manure their turnips, potatoes, and as much of their corn as they can, very bountifully—say from 40 to 60 loads per acre. In this case barley is the second crop, followed by wheat and grass seeds. On ordinary lands I have sometimes sown oats on the inverted sward without manure; followed them with hoed crops, well manured; and then seeded down with barley. This leaves the land in capital condition for good, luxuriant meadows. On some lands, spring wheat would be more profitable than oats as the first crop in this series. But whatever the order of my rotation, barley invariably constitutes one of its crops. A very extensive and successful farmer here takes but two crops before seeding down, viz., roots or corn highly manured, then barley with grass seeds. He prefers to purchase his oats, and raises barely enough wheat for his own use.

Advantages of Barley over Indian Corn.—On prime corn lands, and where force enough can be obtained to manage it, no crop will yield a better profit than corn; indeed, no one, perhaps, equals it. But it requires the choicest land, great quantities of manure, a great amount of labor, and a favorable climate. On no ordinary farm can all the arable land be kept in a suitable condition for corn; on many farms the requisite amount of manure cannot be had. It is difficult, and would be here impossible to obtain sufficient labor to manage the crop, if it became anything like a general substitute for the other grains. And finally, on many of our hill lands corn is always a precarious crop, even with the best management, by reason of the shortness of time between the spring and autumn frosts.

When any of these considerations prevent the rearing of corn, I regard barley as the best substitute. It has these advantages over the former: it does not absolutely require so rich land as corn, though, as I have said, it will yield a profitable return on the very richest land. Its cultivation requires no more labor than the cultivation of wheat. It will ripen in the shortest season and on the frostiest lands. Its early ripening gives it an advantage over corn under any circumstances, for summer and fall feed to cattle and swine. Where pork is fattened to any considerable extent, this is an important consideration. Pork is made nearly a half cheaper in warm than in cold weather; and to make its production profitable, swine should be at least one-third fattened by the time corn is ripe.

Threshing Barley.—This may be done by machines, by the flail, or by horses. It threshes more easily than wheat or oats. Much is written about "hummeling," or breaking off the awns or beards from the grain. I thresh out the grain as I would oats, and that is all. It is then fit to be sent to the mill to be ground into meal for stock.

Storing Barley.—I put it into bins holding, say one hundred bushels each, in a granary; and I never have had occasion to move it or shovel it over, and I never have had any receive injury.

You will please excuse me for the desultoriness of these rapid remarks—and, believe me, sir,

JOHN S. SKINNER, Esq.

Your friend and obedient serv't,

HENRY S. RANDALL.

THE TRUE COTTON REGION.

TO JOHN S. SKINNER, Editor of The Farmers' Library :

Sir : When I wrote the hasty article on the Culture of Cotton in South Carolina and Eastern Georgia, for your July number, it was very far from my intention to provoke a discussion of the Tariff, or to elicit a comparison between the productive capacity of this region and the valleys of the Mississippi and Red Rivers. Your correspondent X. Y. Z. in your September Journal has, however, made issues with me on these topics, and I trust you will indulge me in a few words by way of reply. As the Tariff has been materially modified, and will never again be increased, it is, perhaps, more a matter of curiosity than real interest to refer to its past provisions, and it would be a waste of your valuable space to discuss them to any length. The amount and cost of clothing which X. Y. Z. allows to a plantation of 50 hands I do not except to. But he has by no means enumerated all the articles used on such a plantation that are subject to duty, nor even the major part of them. He should have mentioned iron, and manufactures of iron, which items alone cost me about as much as negro clothing. Cotton bagging, rope and twine cost fully as much more. Then there is leather, used extensively for other purposes than shoes ; salt, sugar, molasses, and many other articles, all of prime necessity, which were heavily taxed. I will venture to say, if X. Y. Z. keeps an account of his plantation expenses, that after deducting what he pays his overseer, his physician, and for his provisions not raised at home, he will find a balance of \$20 to \$25 of cash expended for *each hand* in articles subject to duty. And it so happens that the duties imposed on these articles are generally the very heaviest in the old seven in the new Tariff. I hazard nothing in saying that, under the act of 1842, they averaged 50 per cent. *ad valorem* ; and I could prove it, if necessary, by a reference to the items. It follows, then, that even at the lowest rate of \$20 per hand expended for dutiable articles, the amount of tax directly imposed by that Tariff was \$6 66 on each hand, or \$333 on 50 hands, instead of \$109 20 ; or \$4,329,000 on the 650,000 hands which I presume are engaged in cotton culture ; or \$11,984,000 on the 1,800,000 working slaves of the South, supposing the rest to consume no more than those on cotton plantations. If the six millions of free persons of all ages and classes in the South consumed no more each than the effective slave on a cotton plantation, the tax on their consumption under the Tariff of 1842 was \$39,960,000, and the aggregate tax on the whole population of the Slave States, white and black, was \$51,944,000, estimated at these exceedingly moderate rates. And this enormous tax was paid by them as *consumers* only. The additional loss to them as *producers* and *exporters* I will not undertake to estimate. Nor will I make a point of it in this communication, since some political economists (and I presume X. Y. Z. thinks with them) deny that there is any loss in exchanging our productions for articles subject to heavy duty, rather than for those not subject to duty. I will only say, *en passant*, that the Tariff men *think* differently, whatever they may *say*, since they refused to allow any duty to be imposed on tea and coffee, for which articles almost the entire amount of manufactured cottons exported from the United States are exchanged in China, Brazil, and a few other places. I do not, by any means, intend to say that the tax thus paid by the South goes into the Treasury of the Union. Far from it. Perhaps *one-fifth* may go there. The other *four-fifths* go to protect "*home industry*." Not that "*home industry*," indeed, which goes to make and improve a "*HOME*" on the broad and fertile *lands* of our heaven-favored country, which shall be a perpetual fixture on our soil, and never-failing source of wealth, strength and happiness to our republican people ; but the "*home industry*" that labors within walls reared and sustained by CAPITAL, which is here to-day and there to-morrow, and belongs to any country and to any institutions that will bid highest for it.

But X. Y. Z. contrasts the productive capacity of our region with his own.—

Now I have seen such statements as his before, and sometimes to my sorrow. I long agitated in my own mind—as who here has not?—the question of emigrating to his golden region. I ardently sought, and sometimes *bought*, information, and the result has been the conviction that *no man has gained by it*. If any who removed hence have done well in the West, they would have done well, perhaps better, here. And I would cheerfully abide the issue, if this opinion of mine could be *put to vote among the emigrants*. With due deference to X. Y. Z. I must say I do not put full faith in averages of 25 and 35 bushels of corn per acre, and 2,400 to 3,200 lbs. cotton per hand, in Louisiana. On the best lands, *in favorable seasons*, such results have, I do not doubt, been realized. But as a general average for a series of years—the past ten for instance—he is a fortunate planter who has, even in Louisiana, made an average of 20 bushels of corn and 2,000 lbs. cotton. Here is an issue of fact which, of course, cannot easily be decided. But I state an opinion which I have taken much pains to form, and which is, I think, at all events, entitled to full as much credit as my previous statement that our average production here is 10 bushels of corn and 1,200 lbs. of cotton.—When the difference in the prices of land in Louisiana and this region—our superior healthfulness—the greater increase of our negroes, and the advantage of Atlantic markets, &c. &c. are considered, I do not think a great deal more *clear money* can be realized there from 20 bushels of corn and 2,000 lbs. cotton, than from 10 bushels of corn and 1,200 lbs. of cotton here. Of this I feel sure—that if the cost of moving hence to that country—the innumerable small losses incurred—the sacrifice of lands and fixtures here—the far greater cost of them there—and the immense disadvantage of planting soil one is not acquainted with, and very often losing several years before a full crop can be made—if all these things could be estimated and reduced to a cash value, and that amount expended here in improving our homesteads, I am perfectly confident that we should, in any series of years, make more money per hand, if not per acre, than the emigrants to Louisiana have made heretofore or will make hereafter.

Nothing is so easy as to point to fine crops or fine plantations and draw general conclusions so brilliant as to carry away the imagination and defy all sober reasoning. It could be done here, also, if this were not an old country and every body did not *know* that it is no El Dorado. People will not look at “sunny sketches” if the scene is in South Carolina or Eastern Georgia. Place it any where beyond Flint River, however, and nothing is too highly colored for their credulous imaginations. Now, in this region we make on our bottom lands from 30 to 60 bushels of corn, *when freshes do not interfere*. I have myself made 83 bushels per acre on a field of 25 acres. These crops were more frequent before our country was cut down. Now they occur once in six or seven years only; but they do occur. One of my neighbors made, last year, an average of 2,000 lbs. seed cotton on a ten-acre field, unmanured, fresh swamp land; one selected acre made over 2,700 lbs. On a few acres I averaged, myself, 2,600 lbs. and I have this day (15th Sept.) picked 564 lbs. from a single acre, selected as the best of 100 acres of fresh swamp, planted this year for the first time. It will, no doubt, produce considerably over 2,000 lbs. Permit me to say, that such of us as have resolved to stay here and improve our lands with the money we know it would cost us to move West, are opening virgin swamps far above high-water mark, which, though expensive to bring into culture, promise to be of vast and exhaustless fertility. When the same is done generally, this region will compare with any in the world. Permit me also to state an opinion which I well know will be met by an universal smile of incredulity, and perhaps diminish any confidence that may be placed in my previous statements: *Georgia and South Carolina are, after all, the Cotton States, and time will prove it*. We have the cotton climate; and our lands are susceptible of improvement to any extent: our best lands remain yet untouched. Time, energy and *low taxes* will bring them out. With the present race of planters and system of management the rich bottoms of the south-west may go beyond us; but when to their extreme seasons—becoming more uncertain; to their innumerable insects—becoming more numerous; to their sickness—becoming more so—*shall be added a warm soil*, the improved lands and culture, and, above all, the genuine cotton climate of these States will prevail over them.

One word more to X. Y. Z.: Is he sure that the reduction of the Tariff will

materially reduce the price of sugar and divert planters from that business? I very much question any permanent fall in the price of sugar. Let any one scrutinize our imports—ascertain the amount of sugar entered at our Custom-Houses; add to it the amount produced in the United States, and then estimate the quantity that *must be consumed* in our country, and I think he will come to the conclusion I have long entertained, that under our high Tariff *an immense proportion* of the sugar used in the United States has been *smuggled*. The present duty will offer no bounty on smuggling. At any rate, it is pretty certain that since the British West Indies have been falling off in the production of sugar, the demand for it has been gaining on the supply. The reduction of our Tariff, or the British Tariff, and the reductions contemplated in Russia and the Zollverein, will give a still greater impulse to consumption, and leave it scarcely doubtful that for the next ten years sugar will command as high a price as it has done for ten years past.

S. B.

THE POTATO DISEASE.

REPORT ON THE DISEASE OF THE POTATO CROP IN SCOTLAND IN THE YEAR 1845.

THE Highland Agricultural Society of Scotland, impressed with the importance of placing on record the results of the experience of agriculturists regarding the disease which had so widely affected the potato crop last year, directed attention to the subject, in a paper drawn up with care, which has been widely circulated in the agricultural districts of that country.

The points to which this learned and patriotic Society invoked inquiry were, the period at which the disease manifested itself; the state of the weather; the appearances presented by the stem, leaves, flowers, and tubers; the degree in which different varieties were affected; whether potatoes recently obtained from seeds have been less subject to the disease than those which have been long raised from sets or tubers; whether any particular condition of the soil as to wetness, previous cultivation, or the kinds of manures used, appear to have had any influence in promoting, retarding, or preventing the disease; and, finally, as to the mode of storing the potatoes. With an alacrity and public spirit which cannot be too warmly admired or too earnestly commended to the emulation and the shame of agriculturists in some countries, all these queries have been answered by *many of the most distinguished farmers in the country*. These answers have been most carefully sifted and the results classified and presented in the clearest form.

The Society in their publication quote from 132 replies to these several queries, and give the result in a brief summary, for which we hope to find room in our next. Here is capital material, in these answers *in extenso*, for the United States Government agricultural periodical. They will altogether make about as much [200 pages] as was published in their last under the title of "*Patent Office Report*;" and though this part of the document, like its predecessor, will have no merit of originality, it will be ten times more valuable than much of the trash that appears in that crude, chaffy and ill-digested annual. Like that, too, this dish of murphies may be spread before the sovereign people at a cost to the Government of not over \$20,000. In the mean time, we will serve up the essential extract and substance of it to our readers for *not more than five cents each*. We will only anticipate the results of this careful and authentic examination of a subject of the greatest importance, so far as to state now, that nearly all the reporters

state that potatoes raised recently from seeds were equally subject to the disease as those which had been long propagated from tubers; and in the opinion of many of the reporters, the potatoes recently raised from seeds were more liable to be affected than the others; and as to *manures*, the great mass of authority goes to establish that no modification of the disease was observed to result from the condition or kind of manure, and that it manifested itself to an equal extent, and with equal virulence, under all applications, whether of common manures, or of what have been called special manures. With reference to potatoes from seed, the above statement agrees with what we were told some time since by Mr. McIntire, of Albany, a farmer of uncommon intelligence and the highest respectability.

☞ THERE were imported into Liverpool, this year, from America, 877,659 barrels of flour, and from Canada 246,276, in all 1,123,935 barrels. The increase of Indian corn is remarkable. In 1845 the import was 37,000 quarters; in 1846, 192,000 quarters. The stock at present in Liverpool is 340,000 barrels of flour, free and in bond, and about 200,000 quarters of wheat, free and in bond. The other grain may be estimated at about 100,000 quarters. Thus we see what a trade the corn trade in Liverpool is likely to be. [English paper.

PRICES CURRENT.

[Corrected, October 24, for the Monthly Journal of Agriculture.]

| | | | | | |
|-------------------------------------|----------------|------------|---------------------------------------|--------------|------------|
| ASHES—Pots, 1st sort..... | £ 100 lb. 4 50 | @ — | Staves, White Oak, pipe. £ M.... | 50 | @ — |
| Pearls, 1st sort, '46..... | 5 | @ — | Staves, White Oak, bhd..... | 40 | @ — |
| BEESEWAX—American Yellow.... | — | @ 27 | Staves, White Oak, bbl..... | 30 | @ — |
| CANDLES—Mould, Tallow. £ lb.... | 9 | @ 11 | Staves, Red Oak, bhd..... | 24 | @ 26 |
| Sperm, Eastern and City..... | 25 | @ 38 | Hoops..... | 25 | @ 30 |
| COTTON—From..... | 8 | @ 113 | Scantling, Pine, Eastern..... | — | @ 15 |
| COTTON BAGGING—American..... | 123 | @ 13 | Scantling, Oak..... | 30 | @ 35 |
| CORDAGE—American..... | 11 | @ 12 | Timber, Oak..... | £ cubic foot | 22 @ 33 |
| DOMESTIC GOODS—Shirtings, £ y..... | 5 | @ 11 | Timber, White Pine..... | 15 | @ 22 |
| Sheetings..... | 63 | @ 15 | Timber, Georgia Yellow Pine.... | 20 | @ 22 |
| FEATHERS—American, live..... | 25 | @ 30 | Shingles, 18 in..... | £ bunch | 1 75 @ 2 |
| FLAX—American..... | 7 | @ 7 1/2 | Shingles, Cedar, 3 feet, 1st quality. | 25 | @ — |
| FLOUR & MEAL—Genesee, £ bbl..... | 6 | @ — | Shingles, Cedar, 3 feet, 2d quality. | 22 | @ 23 |
| Troy..... | 5 93 1/2 | @ — | Shingles, Cedar, 2 feet, 1st quality. | 17 | @ 18 |
| Michigan..... | 5 87 1/2 | @ 5 93 1/2 | Shingles, Cedar, 2 feet, 2d quality. | 15 | @ 16 |
| Ohio, Flat Hoop..... | 5 87 1/2 | @ 5 93 1/2 | Shingles, Cypress, 2 feet..... | 13 | @ 14 |
| Ohio, Round Hoop..... | — | @ — | Shingles, Company..... | — | @ 28 |
| Ohio, via New-Orleans..... | — | @ — | McSTARD—American..... | 16 | @ 31 |
| Pennsylvania..... | — | @ — | NAILS—Wrought, 6d to 20d... £ lb. | 10 | @ 12 1/2 |
| Brandywine..... | 6 | @ — | Cut 4d to 40d..... | 4 | @ 4 1/2 |
| Georgetown..... | 6 | @ — | PLASTER PARIS—£ ton..... | 2 | @ 2 25 |
| Baltimore City Mills..... | — | @ — | PROVISIONS—Beef, Mess. £ bbl.... | 7 | @ 8 |
| Richmond City Mills..... | 7 | @ — | Beef, Prime..... | 6 | @ 6 62 1/2 |
| Richmond Country..... | 6 | @ — | Pork, Mess, Ohio..... | 10 12 1/2 | @ 10 25 |
| Alexandria, Petersburg, &c..... | 6 | @ — | Pork, Prime, Ohio..... | — | @ 9 25 |
| Rye Flour..... | — | @ 1 50 | Lard, Ohio..... | £ lb. | 7 1/2 @ 8 |
| Corn Meal, Jersey and Brand..... | 4 25 | @ 4 50 | Hams, Pickled..... | — | @ 6 |
| Corn Meal, Brandywine..... bhd. | — | @ — | Shoulders, Pickled..... | 4 1/2 | @ 13 |
| GRAIN—Wheat, White..... £ bush. | 1 30 | @ — | Sides, Pickled..... | — | @ — |
| Wheat, Red..... | 1 15 | @ 1 20 | Beef, Smoked..... | £ lb. | 8 1/2 @ 9 |
| Rye, Northern..... | — | @ 80 | Butter, Orange County..... | 16 | @ 18 |
| Corn, Jersey and North..... (meas.) | 75 | @ — | Butter, Western Dairy..... | 14 | @ 15 |
| Corn, Southern..... (measure) | — | @ — | Butter, Grease..... | — | @ 7 |
| Corn, Southern..... (weight) | 75 | @ — | Cheese, in casks and boxes..... | 7 | @ 7 1/2 |
| Oats, Northern..... | 35 | @ 36 | SEEDS—Clover..... | £ lb. | 6 @ 7 1/2 |
| Oats, Southern..... | — | @ — | Timothy..... | £ tierce | 11 @ 15 |
| HAY—North River in bales, £ 100 lb. | 45 | @ 50 | Flax, Rough..... | 9 25 | @ — |
| HEMP—American, dew-rotted... ton | 85 | @ 95 | SOAP—N. York, Brown..... | £ lb. | 34 @ 6 |
| " " water-rotted..... | 130 | @ 185 | TALLOW—American Rendered.... | — | @ 24 |
| HOPS—1st sort, 1845..... | 11 1/2 | @ 12 1/2 | TOBACCO—Virginia..... | £ lb. | 21 @ 6 |
| IRON—American Pig, No. 1..... | 30 | @ 32 50 | North Carolina..... | — | @ 5 |
| " " Common..... | 22 50 | @ 25 | Kentucky and Missouri..... | 21 | @ 7 |
| LIME—Thomaston..... | £ bbl. | 75 @ — | WOOL—Am. Saxony, Fleece, £ lb. | 32 | @ 34 |
| LUMBER—Boards, N.R., £ M. ft. cbr. | 30 | @ 35 | American Full Blood Merino..... | 27 | @ 28 |
| Boards, Eastern Pine..... | 11 | @ 13 | American 1/2 and 1 Merino..... | 22 | @ 25 |
| Boards, Albany Pine..... | £ pce. | 10 @ — 18 | American Native and 1 Merino.... | 20 | @ 21 |
| Plank, Georgia Pine..... | £ M. ft. | 27 @ 30 | Superfine, Pulled..... | 26 | @ 27 |

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NO. 6.

EXPLANATION OF THE PLATES.

The first Plate presents a Portrait of Mr. W. R. Grinnell's prize colt, CHAMPION, three years old, by ALMAC—he by Mambrino.

The second Plate.—The second represents, as will be seen, analytical sections of mould-boards of the East Lothian, Mid-Lothian, Berwickshire and the Lanarkshire Plows—being illustrations of Stephens's Book of the Farm.

FARMERS' CLUBS.

RULES FOR THEIR ORGANIZATION AND GOVERNMENT; WITH SUGGESTIONS AS TO THEIR OBJECTS AND MANNER OF PROCEEDING.

WE have long been persuaded that these Clubs, holding monthly meetings for free and familiar discussion, when well and judiciously conducted, are better calculated for the increase of agricultural knowledge and, of course, for the promotion of agricultural prosperity, than are our *Annual Fairs*; for which much time and expense are appropriated by those who contribute to them, and which, when the year rolls round, come and vanish, very much like "trials of speed," leaving time scarcely sufficient, among the thousands who are brought together, for a day, even to exchange salutations—much less to exchange information, and so acquire and impart a better knowledge of the various branches of their common pursuit.

The chief benefit of a show is the opportunity of letting those who go, see what are the qualities of the various breeds of domestic animals, and, by the display of the best specimens, evince the degree of excellence which may be attained in the cultivation of fruits and vegetables by superior care and intelligence. And still farther are they useful in this: that some are prompted to buy and take into their counties and neighborhoods specimens of superior animals for the improvement of the neighborhood stock; but it sometimes happens, unfortunately, that these purchases of large, sleek, fat-looking animals, captivating to the eye, are made without judgment or reference to the particular resources and circumstances of the region to which they are carried; and thus may mischief, instead of benefit, ensue the most patriotic and well-meant designs of the purchasers. One farther remark here may not be out of place: In the States south of New-York and Pennsylvania, if a man buys, no matter at what cost, a male animal of the choicest blood and qualities, his neighbors are apt to think him churlish and mean if he does not allow the free use of him to all who choose to send, if indeed they do not expect the animal to be sent to them! This is one of the

evils that sometimes come out of good. It is an abuse of a commendable trait—an injudicious exercise of a hospitable and generous temper characteristic of the people of that section. Now, where an opulent farmer chooses to buy and make an out-and-out present of a costly animal to a Society or a neighborhood, that's very well—as the French say, *une autre chose*. We would like to be among the first and the loudest in applause of such munificence on the part of those who can afford it. Heartily do we wish we could see a little more of it; but observation has shown that where a man gets choice animals, cattle, or sheep, or hogs, and then lets any mean or miserly neighbor have the free use of them, exchanging evenly, for instance his choice Leicester or South-Down lambs for common ones, those who thus get easily into the blood, set very little store to it. Like woman's love, what is lightly got is lightly valued; and thus the race soon degenerates, and steady, progressive improvement, which should be the object of all, is sacrificed to gratify a mean spirit on the one side, and good nature, and too often a low spirited thirst for vulgar popularity on the other.

It is not by cheapening anything really excellent of its kind that melioration is secured. It has not been by such a system of making good things common, that the progress of improvement has been kept up in England without abatement for the last hundred years. It was not under the influence of any such slipshod, careless, mistaken system of liberality that, in August last, JONAS WEBB, the great South-Down breeder in England, had at his annual *letting* of rams some “250 noblemen, gentlemen and agriculturists,” on which occasion one ram was *hired for the season* at \$250; and the first sixty, let *by the season* to the highest bidders, at an average of \$80.

But to return to Cattle Shows as compared to Farmers' Clubs. The former are highly useful in the lights and for the objects we have mentioned. But they are far more liable to abuse and perversion than *Clubs for discussion*; and when intrigue and management supervene, and the people begin to see that “kissing goes by favor,” ill blood and disgust soon take the place of patriotic exertion and honorable and generous rivalry. There is, however, no human institution or enterprise that is not obnoxious to some objection or abuse; and all we can do is to endeavor to eschew the evil, and to keep the right constantly in view.

Of one thing we respectfully think we may hazard a word of suggestion: that agricultural papers, especially, would best promote the valuable objects of these exhibitions by a severe, though just and impartial criticism, rather than by indiscriminate praise of everything that is exhibited, of every thing that is said, and every thing that is done! Especially should they reprobate all low, mercenary, underhanded attempts to bias the minds of judges for awarding premiums; and yet more the parceling out of premiums, here and there, on objects devoid of any extraordinary excellence, scattering the funds of the Association as so many seeds from which to gather a rotten harvest of ill-grounded and ephemeral popularity. We have known, for example, resolutions of thanks to be passed complimenting a Mayor and the citizens of a town for their hospitality, when at that very meeting, a wealthy and hospitable Member of Congress coming from a great distance, President of an Agricultural Society at home, and introduced as such, sat up all the first night after his arrival, by the tavern fire; and the next night was forced to leave at 9 o'clock for want of a bed. And at another town, mors recently, hotel charges were enhanced, for the occasion, practicing on strangers from foreign territories and distant States the most shameful rapacity. So we repeat, that praise, to be useful, should not be indiscriminate.

So much for *Agricultural and other Fairs*—to which we are not to be suspected of entertaining any hostility, for we caused many to be gotten up before some of those, if any there be, who would harbor the mean suspicion, were old enough to know “a B from a bull’s foot.” After all, *Farmers’ Clubs*, instead of being opposed, are *eminently subsidiary* to Annual Fairs; and those who are impressed, like our correspondent, with a sense of their usefulness and good tendency in an intellectual point of view—the only view in which almost anything is worthy of regard—will rejoice with us to see how they are extending throughout the country; so much so that we hope it will not be thought that the space is ill employed which is here appropriated, perhaps once for all, to this subject.

A Farmers’ Club, or rather an Agricultural Society which practically assumed the more useful character of a Farmers’ Club, has been steadily maintained in Talbot County, Maryland, for now twenty years or more, and its good effects are visible, not only on the face of the country around, but in the fine spirit, intelligence and correspondence of those who are connected with it, or who live and practice Agriculture within the sphere of its influence; for in all such cases, though these Associations depend upon a few to form and keep them up, the benefits, as respects information and improvements in processes and implements, accrue to the whole county, and often extend beyond its limits.

If farmers were half as watchful of their own welfare as other classes are there would not be an election district in any State in the Union without one of these Clubs: and all would form a common League for common action when needed. Erratic and desultory as discussions at some of them are apt to be, coming at last to no specific resolution, to be published as the result of them, they yet serve to elicit and diffuse much valuable information.

In the deliberations of these Societies and Institutes, formed by the various trades and pursuits *in the cities*, almost all measures for their peculiar benefit and monopoly, have their origin. They are not content even with collecting libraries, causing lectures to be delivered, holding exhibitions and offering premiums to further and to illustrate the progress of improvement in their several arts and vocations. They go farther: they interpret the wishes, make known the wants, expose the wrongs and vindicate and assert, before the sovereign power of the country, the rights of the entire body for whose benefit, as a class, they have been organized. They constitute, in a word, not mere *talking*, but active working Societies, bringing their united talents and influence to bear, promptly and efficiently, on the law-making power, for their own peculiar advantages; while, with shame be it written, farmers are too inert or too timid, to examine, criticise, and boldly arraign and denounce, as they should, where needed, all public measures and acts of omission as well as of commission, on the part of men in authority, calculated injuriously to affect them. Alas! they seem, in too many cases, to be devoid of the common instinct of self defence. They will scarcely turn when trodden upon. Else how is it that they will submit to go on being taxed, year after year, thousands on thousands, for military schools, maps, charts, surveys, voyages of discovery and journals of travel over sea and land, “mountain and valley;” and yet not demand one dollar for *direct instruction in Agriculture*? Well we know what the answer will be: We do not choose to be considered ignorant of the fact that voyages of discovery and explorations through unknown regions of land and water *may* open up new sources of trade and commerce; and so by possibility ultimately benefit Agriculture: but we *know* that Agriculture would be very soon, and throughout the whole nation, benefited by schools which

should instruct the rising generations in the reason and philosophy of everything on which agricultural labor, and capital, and mind are brought to operate and to depend for prosperity and enjoyment. The solemn fact, however, is, that agriculturists are so *spread over the whole country*, that they can hardly be said to constitute a *class*, for any efficient action useful to themselves, and hence there is none of that personal sympathy for them, in public bodies, that there is for those who constitute more distinct, well-defined and privileged classes and branches of industry. Thus it is, will the reader believe it, that it was not until comparatively very lately, that in Congress, or State Legislatures, any Committees have been appointed on the *great business and concern of the nation!* And even now their appointment is, in most cases, rather a matter of form and *humbuggery*, than for any real service they are intended to do or actually do perform! Who can point us to any of their Reports on the condition and wants of this great fountain of national wealth and power?

Propose a law that affects the navigation class, or the mercantile class, and some Chamber of Commerce is perpetually sitting in its midst, like a great spider in the center of his web. The least breath of harm reaches him, as news is conveyed by the telegraph, and wakes him up in a spirit of determined resistance to the first approach or sign of aggression. So with the Army and the Navy; not a Member of Congress whose personal feelings may not be enlisted through sympathy with some member or some influential constituent nearly connected with some member of the profession. Every proposition which in any way affects particular classes becomes the personal concern and commands the personal interposition of every member of that class. How different with the great body of farmers, who are, in fact, *the people!* Their business, their welfare, their rights, as far as they are to be affected by the action of Government, are left to the care of everybody and of nobody—the result whereof need hardly be told. There is an old song which runs—

"I care for nobody, no, not I, for nobody cares for me."

Farmers, as a class, might with truth sing—"Nobody cares for us, no, not they, for we—*don't care for ourselves!*"

Not so will it be, may we not hope, when Farmers' Schools and Farmers' Clubs shall come to be established wherever population is sufficiently dense to admit of it, and when these, acting with sound understanding, and in concert, for the *good of the land*, shall *teach men in power* that Agriculture, "the nursing mother of all the arts," is, of all human concerns, that which should command their first and most anxious care and devotion.

Here, for example, the following advertisement catches our eye, in a morning paper, and even before they break their fast, will probably have been read by thirty thousand, at least, of those for whose benefit these Institutes are gotten up:

["Mechanics' Institute Lectures—Professor Hume's Introductory Lecture to his Course on Experimental Chemistry, as applied to Arts and Manufactures, will be given on Wednesday evening, 11th inst. at 8 o'clock, in the Institute Lecture Room, City Hall.

The Course will comprise one of the most useful and practical series of experiments in Chemical Science ever presented to the public. In connection with this Course will be one on the Steam Engine, illustrated by one of the largest Didactic Models in the country; and also one on Astronomy and Mechanical Philosophy.

Season tickets \$3; single Lectures 25 cents. To members of the Institute free. Terms of membership, \$1 initiation and \$2 yearly dues. Rights and privileges of a member: Ownership in all property, use of reading-rooms and library, free admission to all lectures, and a discount from regular charges to non-members, of 20 to 100 per cent. in the schools and classes. Minors under 18 can have yearly privileges for only \$1.

For season tickets or membership, apply at the Institute Rooms, City Hall.

By order of Lecture Committee.

CHARLES L. BARRITT, Actuary.

Among the unread (for want of time) pamphlets on our table, is an Address by Rev. Albert Gallatin Palmer, delivered before "*The Mechanics' and Working-*

Men's Literary Association of Stonington, Ct.," and we could name a list a yard long of such Associations of classes of people, of all pursuits, except that of Agriculture, who have their libraries, their lectures and their laboratories. Farmers! can you think of these things and not rouse up from your Rip Van Winkle lethargy? Do you wonder that not only the capital but the *elite* of the young men of the country, should concentrate in the towns, where, owing to superior enterprise, so many aids are provided for sharpening the intellect and preparing it to cut its way through every obstacle to competence and distinction? Rouse up, then! if not for your own sakes, for the *sake of your sons*—those who inherit your name and your blood. As for giving them money—base lucre!—consider it but as trash, when contrasted with inherent personal capacity for self support and usefulness to the country. How many of them fool away inherited fortunes! How few even of the largest estates descend to the third or even to the second generation! How much oftener large expectancies enervate and ruin than invigorate, and elevate, and bless those on whom they descend! *Give them knowledge, give them character, and you give them the best sort of estate.* Let us quote a passage from a noble address which we read last night after ten, and then retired deeply impressed with admiration of the author and his sentiments:

"I repeat it, I know no more honorable object for a right-minded farmer to propose to himself, than to teach his sons, by economy, and by improvements learned by experiment and observation, or from books, each to get a comfortable living on his portion of the paternal acres; just as the Roman farmer, in the classical story, portioned off one daughter after another on a full share of his vineyard, reserving for himself only as much as he gave to each one, and yet continued to produce

just as much as when he possessed the whole. Such a farmer is a good economist; he is laying up the best resource for his old age, in keeping his children about him, with their affectionate society. He is a good parent, for he provides for those who look to him the best chances of respectability and happiness. He is a good patriot, for he does his part toward making the community stable, well ordered, prosperous, and safe."

In the author* of such noble thoughts, now, we believe, elected to Congress, the plow will have at least one honest, earnest advocate. Let us hope he may be put on the Agricultural Committee.

But we could not, in any language of our own, describe in fewer words, or so well, the utility and the objects of such Clubs, as we find it done to our hand:

"By means of these institutions much valuable information is diffused, different modes of cultivation are compared and their results ascertained, improvements are suggested and made public, and the interchange of thoughts, opinions and observations promotes good feeling, and in various ways exercises a beneficial influence. Among the objects sought to be obtained by Farmers' Clubs are the following: To ascertain the nature and qualities of the soils and subsoils of the district; to inquire into the comparative value of different sorts of manures; to test by experiments alleged improvements in cultivation, in agricul-

tural implements, or in the management of stock; to discover the most profitable varieties in corn, seeds, or roots, and the most advantageous rotation of crops; to collect information respecting the state and progress of Agriculture, by correspondence, by the establishment of agricultural libraries, and by such other means as may be deemed expedient; in a word, *to advance the interests of Agriculture in every possible way*—reducing theory to practice, and throwing the light of knowledge and science over the most useful and important of the arts of life."

Now, the probability is, that most of those who read this will say—"Yes, doubtless, it's all very well; but how are we to go about putting your advice into force? What can *I* do toward it?"—Hold on, reader, and we will tell you; for our aim has ever been, in our humble way, not to amuse our readers with some humbug of the moment, as children are amused by tying on a string and letting

* John G. Palfrey, of Cambridge, Mass.

fly a June-bug or a kite : but rather to bring our suggestions to some practical and useful bearing. We therefore recommend that any young farmer or planter, wishing to be of some use in his day and generation, transcribe the following rules, and as he meets one neighbor and another, get them to sign, agree to meet at a convenient place, his own or some neighbor's house, or neighboring village, and there at once *commence* the organization of a Club. Five or six will be sufficient to form a beginning. We merely give these rules as we find them at hand ; they may be modified according to circumstances. In another place, in subsequent numbers, if not in this, we will respectfully suggest some questions, and chalk out some work for these Clubs when formed :

RULES.

1. That the officers of this Club shall consist of a Chairman, Secretary (who shall also act as Treasurer), and a Committee of five members, all of whom shall be elected annually. Five of the Committee, including the Secretary, to form a quorum.

2. That at each meeting the authority of the Chairman upon all disputed matters shall be final.

3. That it shall be the duty of the Secretary to receive the subscriptions, to keep the accounts of the Society, and also of the books in circulation.

4. That it shall be the duty of the Committee, in the absence of the Chairman, to elect a Deputy Chairman, to take care that at each meeting a subject be proposed for discussion at the succeeding one, and to decide upon all matters connected with the business of the Club.

5. That any person wishing to become a member of this Club must be proposed by one member and seconded by another, when he may be elected by a show of hands.

6. That the annual subscription payable by each member shall be \$1 50, which sum shall be paid in advance.

7. That the Club shall meet on the last Saturday in each month.

8. That the Chairman shall take the chair at 3 o'clock, and any business of the Society shall be first transacted ; after which he shall call upon the member introducing the subject for that evening, the discussion upon which

shall be terminated by 8 o'clock at the latest ; and all questions upon which it may be necessary to come to a division shall be decided by a majority of votes.

9. That there shall be no forfeits for non-attendance.

10. That the first meeting of the Club shall be held at, &c. &c.

11. That the annual meeting for choosing the officers, and auditing the accounts, shall be held in January.

12. That all party politics and questions shall be totally excluded from the discussions of this Society.

13. That the books purchased by this Society shall be confined to agricultural and horticultural works, the price of which shall not exceed the existing funds of the Club.

14. That it shall be competent for any member to propose the purchase of a work which, if seconded, shall be ordered or refused by a show of hands.

15. That all arrangements regarding the books shall be decided by the Committee.

16. That any member may introduce a friend ; but no person residing within ten miles of the place of meeting shall be introduced more than once as a non-subscriber. Such visitor shall be at liberty to take a part in the debate, but not to vote on the subject.

17. That any member wishing to effect an alteration in the above rules shall give notice in writing to the Secretary of his intention at one meeting, who shall propose it at the next, when it shall be determined upon by vote.

Let us here make a few observations on the above rules. We doubt the necessity, in the first place, of a special Committee of five particular members, being persuaded that as these meetings are to be but once a month, all business might be transacted in a Committee of the whole body present ; only providing for the number necessary to form a quorum and transact business. A man of judgment, having witnessed the operation of these rules, and being asked whether in his opinion it would be better to hold these meetings at farmers' houses, combining with them a series of monthly dinners, replied substantially that he thought it would be better to meet, after an early dinner at home, at some county town, or central village, or cross-roads, convenient to the majority of the members. Taking dinner at one, they might assemble at the distance of ten miles, and be in session at 3 o'clock. Where they meet to dine with each other, a very ridiculous and absurd rivalry soon ensues, originating, as they pretend, with their wives, but generally winked at by themselves—to see who shall give, not the

most plain and simple, and therefore the best ; but the most luxurious and extravagant, and therefore the worst and the most unsuitable and out-of-place sort of dinner that could be set before sensible men professing to be in search of the best means of *enlightening the minds and bettering the condition of themselves and their children*. What do such men, if men of hard, solid sense, animated by the true and appropriate feelings, care about *Julienne soup*, soft crabs sent for to a market ten miles off : for fish *hollandese sauce*, and the various rich and luxurious dishes spread upon the *table d'hôte* of a fashionable hotel, such as Mitchell's U. S. Hotel, Philadelphia—such as *lapereau roti ; canards aux narrets ; ris de veau, aux epinards ; cotellettes de mouton, sauce hashee ; pigeons roti ; poulets, grillée ; des huitres, a la poulet ; tete de veau, sauce cerville ; fricandeau de veau, Maderé sauce, and poulets a la provencale !* In lieu of all these, would not any sensible man, on such an occasion, be much better pleased to be interrupted only while he might take a slice of nice cold corned beef (the plate), such as Col. Jack T. or J. G. D. of Baltimore, knew so well how to choose, and to cure, and to cook afterward ! But besides the fact that these convivial dinners are apt to degenerate into sensual and extravagant indulgences, pleasant enough, we do not deny, in their way and with certain appliances, but not suited to the main purposes of such Associations, they are, in fact, ill adapted to them in various ways. They are too much and too long confined to the *same persons*, and do not admit of extension ; or when extended by invitation, they are made to embrace, for the most part, those who are already the most zealous and the best informed, whereas the object should be, as the true desideratum is, to draw into the vortex of these Clubs and absorb the *most lukewarm and the least enlightened*. “They that are whole have no need of the physician, but they that are sick : I came not to call the righteous, but sinners, to repentance.”

While memory holds her seat, we should be the last to undervalue the social enjoyments of these reunions of farmers at each other's houses, to discuss agricultural questions, especially such as are submitted to *the Board*, after undergoing the revision of the good housewife. Especially shall we always remember the fun and frolic of the mind and spirits we ever had in view ; the *baiting* as well as the debating that awaited us when we repaired on the appointed day to persuade our old friend, the Treasurer, to go into the country, to which he never failed to yield, but always with pretended reluctance. Who of that joyous party has forgotten how at Hayfields we called upon him, and how he rose and let out kink after kink, until presently he stood up in all his hight and animation, in fervid reply to Governor Barbour's Speech at the christening of the LA FAYETTE TANKARD, filled for the occasion with mint julep of John Merryman's inimitable compounding ? Ah ! those were truly times of genuine hospitality and good cheer and good fellowship to be remembered.

“Care, mad to see a man sae happy,
E'en drowned himself among the nappy ;
As bees flee hame wi' lades o' treasure,
The minutes winged their way wi' pleasure.”

Alas !—but we are *out of the latitude !* and so to return to the practical operation and influences of such Clubs, we respectfully suggest that a short account of what is elicited by the debate, particularly as regards any striking facts brought to light, ought to be drawn out by the Secretary and offered for publication to the nearest village paper. Beyond all dispute, all papers read before such Clubs or Societies should be open and accessible to all Editors who choose to make them

public. To lock them up as soon as read, among their archives, or to keep them exclusively for their own use, or for any partial purpose, or for publication with a view to sale, would be totally incompatible with the true and proper spirit and objects of such Associations. Such a narrow course of proceeding will never be countenanced by any liberal minded friend of the cause. Again, a question may arise whether the subject for discussion should be given out, month by month, one month beforehand, or whether it would not be better to have one for each month, agreed upon in the beginning of the year, so that there would be ample time to make observation and trial of manures, animals, implements and processes with a view to the question being *well discussed and settled*. For example, at a meeting in January, twelve questions are decided on, one for each month. When that for February is disposed of, another may be propounded to take its place the ensuing February, and so through the year, twelve months, being always on hand for inquiry, research, and experiment. If any particular subject should present itself, seeming to demand more immediate investigation, an intermediate special meeting might be called for its consideration. These, however, are matters of detail to be arranged by each Club, and are only mentioned as seeming to be likely to arise and to be worthy of early attention among the few who, in the beginning, must always be relied on to bring such Associations into existence. Until farmers can feel interest enough in their calling to assist in their formation, and to enter with spirit into their design and proceedings, they must be content to play second fiddle to other and subordinate pursuits, that live on their substance; and would do well to own at once that they are devoting their lives to an unworthy, spiritless and submissive calling; that, in fact, they have no profession, and are willing to lay down their necks to be trodden upon by those who have more forethought and sagacity; and a higher spirit and determination to take care of themselves.

To give an idea of questions discussed at these Clubs, we copy the first at hand, as having been the subjects of deliberation at the last twelve monthly meetings of a Society whose proceedings are most conveniently within reach:

QUESTIONS.

- The use of saltpetre as a manure.
- The use of gypsum as a manure.
- On the comparative advantages of using fermented or unfermented manures.
- On the management, and cheapest method of keeping cart horses.
- On spade husbandry.

- On the best method of improving the breed of neat cattle in this district.
- On stall feeding.
- On the best plan of keeping farming accounts.
- On the advantages of cutting hay into chaff.
- On the turnip fly.
- On the effect of soil on manures.
- On the selection of seed wheat, and the best method of steeping and planting it, &c. &c.

The writer from whom we have already quoted to impress in more forcible terms our own ideas as to the objects and the usefulness of these Clubs, makes another remark to which we would *especially invite the attention of every parent farmer in the United States*, and if we could, we would make it a part of his grace, to be said daily "before meat:"

"THERE IS ANOTHER POINT I MIGHT NAME, WHICH IS, THAT POINTING OUT TO THE FATHERS THE ADVANTAGES WHICH SCIENCE MAY CONFER ON AGRICULTURE, BUT WHICH THEIR OWN EDUCATION HAS GIVEN THEM LITTLE OR NO TASTE TO FOLLOW UP, MORE READILY INDUCES THEM TO PUT THEIR SONS IN THE WAY OF RECEIVING A MORE LIBERAL INSTRU-

TION, BETTER SUITED TO THE ALTERED SITUATIONS THEY MAY BE CALLED UPON TO FULFILL; AND THERE IS NOTHING TENDING TO THE PROGRESSION OF AGRICULTURE FROM WHICH I AUGUR HAPPIER RESULTS, THAN FROM GIVING A BETTER EDUCATION—AN EDUCATION SPECIALLY DIRECTED TO THEIR FUTURE EMPLOYMENT—TO THE RISING GENERATION OF FARMERS."

Finally, we must close these remarks on Farmers' Clubs, which have been drawn out by our anxieties, as usual, to a greater length than the reader may be

willing to excuse. We will make but one more suggestion: these discussions should be entered upon, not in an idle, ridiculous, slipshod, frivolous manner, but *after due and suitable inquiry and reflection*. "Whatsoever thy hand findeth to do, do it with thy might; for there is no work, nor device, nor knowledge, nor wisdom in the grave, whither thou goest," says the proverb. What is known or conjectured should be imparted in the plainest possible style, and in the *briefest* manner, consistently with perspicuity. Some men cover up and obscure what is obvious, by too much explanation; some are so fond of hearing themselves talk, and so apt to conceit that what *they* say is new and impressive, that they go on talking, *ad infinitum*, about matters and things in general. No encouragement should be given either to the overweening conceit of some or to empty garrulity of others. The men among farmers who most need to be enticed to give in their experience, are often those whose experience is most worth knowing. With the careful—we were going to say conscientious—preparation for the subject, such as we have suggested, in a spirit of decent respect for the grave and important objects of such Associations, almost every question might be so far considered and exhausted as to enable the Club to come, at the close of each session, to a conclusion on the subject, and to the passage of a *resolution* which should embrace and express, as far as that question is involved, and as it involves the interests of Agriculture, the opinion of a decided majority of the Club; and these resolutions should be invariably and widely published for information and criticism. This would be less necessary if farmers could be sure of seeing the full debates, because then they might judge for themselves. We will give, for example, a few of the resolutions, such as may be called the *denouement* or practical result of such discussions, in Clubs whose proceedings are before us. It is in this way that we would urge all our Farmers' Clubs to bring their debates to what we would call a practical bearing, one that *means something*. For instance, the question discussed was, "THE VARIOUS MANURES AND THEIR APPLICATION."

The gentleman who introduced this important question arranged the subject under three heads, viz., organic manures, or such as are of animal and vegetable origin; inorganic, as the earths, &c.; and saline, or artificial manures. After explaining with great clearness the nature and properties of each, their adaptation to particular crops, and the fittest time for applying them, the speaker proceeded to mention the superiority of *farm-yard manure* above all others as the staple commodity upon which the British farmer must mainly depend; because, first, the elements of such manure, when decomposed, become the natural food of plants; second, the variety of these elements makes it serviceable to all kinds of vegetables; third, that when seasons are not favorable to the full development of the powers of farm-yard manure, yet it is neither lost nor proves injurious, as is frequently the case with saline or artificial manures; fourth, that common practical experience enables a farmer to use it safely and advantageously, which cannot be said of some of the earths and artificial manures, which in many cases are positively injurious; and, lastly, that it is the most economical of all others, requiring little more than labor for its due preparation.

The observations of the speaker, which evinced great intelligence, were listened to with more than ordinary attention, and gave rise to an animated and interesting discussion. At a subsequent meeting the following resolution, embodying the views of the members of the Club upon the question, was unanimously agreed to, viz.:

Resolution.—"The subject of the nature and properties of the different manures, &c. having received the fullest consideration of the members present, they are unanimously of opinion that among all the various manures none can be so safely depended upon as well prepared farm-yard manure, both as regards certainty in respect to the produce, on an average of crops, and on the score of economy as regards expense. That this opinion, which has been held by the best practical agriculturists in all ages, is fully borne out in this district by the individual experience of the members present. That the true interest of the British farmer is to husband his home resources; and to that end his best attention should be devoted to the due preparation of farm-yard manures, so as to produce the best quality and the greatest quantity. That, although the members are fully sensible of the great value of many artificial manures, yet they consider such ought not to be depended upon as principals, but only to be used as auxiliaries whenever a deficiency of farm-yard manure exists, or local circumstances point out the propriety of their employment."

It would be impossible in a standard work like this, to give a sketch of the debates and proceedings of any of the thousand Clubs that we hope yet to live to see come into existence; but where they bring their discussions, in this way, to something tangible, we shall endeavor to chronicle them, as an abstract of the agricultural information of the present day, and the conclusions at which men have arrived who have most earnestly and with the best lights at command, studied subjects of most frequent occurrence and of the greatest general importance. We have applied to the President of the New-York Farmers' Club, which with force and zeal meets bi-monthly at the office of the American Institute, for a list merely of the questions discussed and the conclusions arrived at, for any given time back that it may be convenient to supply, as well for the intrinsic worth of these conclusions, as to give an idea of the scope and utility of these Associations. We learn by the papers that the New-York Agricultural Association has put forth a collection of the papers read before it, and anticipate much satisfaction in the perusal of them, when we can get a copy. From some account of a paper from Doctor Stevens, on the Supply of Plants with Moisture, by force of capillary attraction, in dry weather, we are persuaded we shall find its suggestions of much value, as we should expect from anything he would offer.


N. B. Questions before these Clubs should be restricted to some tangible, specific forms and objects. Sometimes they are so general as to amount to pretty much the same as if you were to ask a man "What do you think of matters and things in general?"

For the subjects discussed in the New-York Farmers' Club, the reader is referred to the following:

Subjects discussed before the Farmers' Club of the American Institute, from November, 1845, to November, 1846, inclusive—Meetings semi-monthly.

Marls.
 State Bounties on Silk.
 Care of Cattle in Winter, and the best kinds of Mulberry for our climate.
 Care of Cattle, continued, with the Cutting of Wood for Fuel and Timber.
Extra Meeting.—Same subject continued.
 Green Crops for Manure.
 Culture and Manufacture of Flax.
 Culture of Flax and Hemp, and their Manufacture in the United States.
 Pruning of Fruit-Trees and the Care of Cattle, especially Cows.
 Pruning of Fruit-Trees and the Care of Cattle, continued.
 Same subject continued; with the Pruning of Grape Vines.
Extra Meeting.—Pruning of Fruit-Trees and Grape Vines, and Care of Cattle.
 Cultivation of the Grape, and the Keeping of Cattle.
 Same subject continued.
 Keeping of Cattle and the Culture of Silk.

Extra Meeting.—Same subject continued.
 Culture of Silk; also, Indian Corn—the best kinds and best modes of flouring it for food.
 Indian Corn—its Cultivation, &c. continued.
 Culture and Preservation of Corn; together with Insects Injurious to Vegetation.
 Insects Injurious to Vegetation; with the Curing of Hay.
 Insects Injurious to Vegetation.
 Same subject continued.
 Culture of the Turnip—its Various Kinds, and the Insects which attack it.
 Domestic Wines; and the Root Crops for Cattle.
 Domestic Wines; and the Preservation of Fruit.
 Preservation of Fruit and Vegetables.
 No meeting in October, on account of the Fair.
 The Noxious Influences of the Fires and Gases of Brick Kilns on Fruits and Vegetation.

 NINE OR TEN SHEEP OF THE LEICESTER BREED, imported from England by Hon. HENRY CLAY, passed through Pittsburgh a few days since, on their way to Ashland, under charge of a shepherd who came with them.

REMARKABLE DISCOVERY.

MODE OF KNOWING THE QUALITIES OF MILCH COWS, BY EXTERNAL SIGNS.

If there was any one thing which, more than any other, we determined from the commencement to avoid, in the management of this journal, it was that of *flying kites* for the amusement of our readers—exciting false hopes by proclaiming wonderful discoveries, and panaceas for agricultural complaints, contrary to the laws of reason and Nature. Such tricks sometimes serve for a while to keep up a factitious excitement, until, vanishing into “thin air,” one after another, their aggregate nothingness at last strikes the public mind, dissipates all confidence, and leaves for the wonder-workers, inventors of crude machines, and compounders of nostrums, little else but ridicule or contempt.

It was in this cautious spirit that we announced the extraordinary discovery of M. GUENON, the son of a French gardener, by which he undertook, after more than twenty years of close observation and study, by examination of visible external marks, to pronounce with certainty on the *milking qualities of cows*.

Although we had unbounded confidence in the fidelity of the learned translator of the work, (Mr. Trist,) and the highest respect for his judgment, so far as that was staked or made up on his own observation, in favor of the truth of M. GUENON's system, still we ventured only to say that it “was maintained” that, by the signs laid down, “one may without fail discover, even in a calf a few months old, whether it will make a good milker;” adding, “strange as may appear such a discovery, it yet *seems* to have been subjected, in many cases, to the severest test.” And then we proceeded to give the proofs. These consisted mainly in very explicit statements and certificates by Committees of various Agricultural Societies in France, from which the following are extracts.

The Agricultural Society of Toulouse report:

“We conducted M. Guénon into *seven* cow-stables, with which he was entirely unacquainted. Here forty-six cows were submitted to his inspection. In twenty-two instances he named the exact number of pints given by each cow; in fourteen he came within a pint, and in ten within two or three pints. But the main fact of the discovery we consider as established, as Monsieur Guénon *invariably* distinguishes the good from the bad milkers.—From this fact, with which the Committee was much struck, there results the consequence that *there is really an existing relation* between the milking properties and the visible external signs or escutcheons indicated. The Committee consider as a vast service rendered to Agriculture, a discovery which has taught us to distinguish good from bad milkers; and it is the greater as the system applies to calves, and thus enables us to discard, by handing over to the butcher, worthless heifers that we would otherwise be at the expense of rearing.”

Again: *The Agricultural Society of Bordeaux* appointed a Committee, of whom the Veterinary Professor of the Department was one, and in a very special and particular report, after putting the author and his system through the closest possible examination, (as may be seen at large in Vol. I. of this Journal,) they say, in so many words, to the Society: “*This system, gentlemen, we do not fear to say is infallible.*”

Again: A Committee was appointed by the *Agricultural Society of Aurillac*. their report will be found as follows:

"Yesterday, the 25th of May, M. Guenon arrived at Aurillac, and immediately proceeded with the members of your Committee to the *Veyrac* farm, belonging to the President of the Society. He examined with the utmost care the fine cow-stable of that domain, which embraces one hundred cows, of the best varieties that we possess. He then began his experiments upon a number of cows which were presented to him, and which had designedly been selected from among the best, the moderately good, and the most indifferent of the establishment. Upon each of these separately, M. Guenon pronounced with precision, both in regard to her daily yield of milk, and to the time during which she continued to give milk after being got with calf."

When JENNER commenced his examinations concerning the cow-pox in England, in 1776, it was at first treated by the physicians as unworthy of attention, and twenty years elapsed before it gained credence to be introduced in the public hospitals. "It was," says the French Committee, "after more than twenty years of observations and researches, that M. GUENON succeeded at length in discovering certain natural and positive signs, which constitute the basis of his method—a method *henceforward proof against all error.*" The famous Tyrian purple was produced from an *animal juice*, discovered by accident in a fish's shell.

Reflecting on the singularity and the importance of this discovery, especially to dairy husbandmen, (and, indeed, to the poorest man keeping a single cow,) founded, as it is, on observations of certain phenomena observable on that portion of the cow's frame appropriated as the depository of the milky secretions—a certain difference being there observable, not only in the direction of the growth of the hair, but in what is called the dandruf, or scurf, at the roots of the hair—it occurred to us as having some analogical support in the admitted effect of a *different secretion*, the presence or the absence of which is seen and acknowledged to produce a very marked difference between the entire and the mutilated male, and that as well in the human race as with birds and animals: a difference not confined to the form and size of particular parts of the body, as the head and neck, but extending to the color and the voice, and even to a striking modification of the moral qualities, in man and beast.

How unlike the roar and fierce spirit of the bull are the squeaking voice and docile temper of his brother, the ox—the hair on the forehead of the one *curling* like the grain of the gnarled oak, while the face of the other is mild and smooth as a young heifer's. Behold the gallant "cock of the walk," strutting erect and bold, the very emblem of courage and chivalry; while his caponized brother creeps along on the outskirts of the dunghill, humble and crest-fallen, looking as if ashamed to be seen, without voice to crow defiance or spirit to resist an insult! See, again, how this hideous calamity transforms, in moral and physical character, the wretched human victim of Turkish cruelty. Take away the fountain of that noble passion which, more than any other, leads men to the performance of great actions, and his very fibres and muscles are seen to lose their elasticity; his throat contracts, and he acquires the physiognomy and the voice of a woman. From being brave and generous, he becomes intellectually feeble, cowardly, morose and cruel. Even his *beard* ceases to grow; while, strange to say, on women, this operation, which, according to ancient historians, was by no means uncommon among the Greeks, had quite an opposite effect—since, though it extinguished the sexual appetite, and the bosom disappeared, the voice became harsh and masculine, and the beard appeared on the chin and upper lip. Who would know, *a fortiori*, or without a series of observations, for instance, that leaving a horse in his natural condition would enlarge his neck and *thicken and elongate the hair* of his mane and tail? Now are not all these obvious effects, resulting, as will be admitted on all hands, from the presence or withdrawal of a

certain secretion, quite as strange, and as remarkable in themselves, if we were not so familiar with them, as the signs and escutcheons, consisting in a difference in the growth of the hair on the milk region of the cow, systematized by M. Guénon, after twenty years of study? There are such qualities as ignorance, self-conceit and obstinacy, as well as gullibility. The most casual observer, as he walks along, may see on any cow that these marks do exist and differ greatly in different individuals: the only question is of *their connection* with the milking properties of the animal.

Unfortunately, of all the people in the world, Americans are the most difficult to be prevailed upon to be patient, and quietly take systematic observations to arrive at an uncertain fact or a distant object. They are ever on the *qui vive* for change—expecting to go to-morrow, or next year at farthest, either into another State, or into—an office! They “never are, but always to be blest.” Hence, says Mr. Colman, it is characteristic of a Yankee to rush diagonally across the street, being too impatient to wait to reach the corner, where he may pass with cleaner foot on the flag-stones.

We have been hoping, nevertheless, that some gentleman would take the pains to give the Frenchman's system a *full and careful trial*. The cause of truth in such cases is not served by anybody's conceits, and conjectures, and suppositions. All these one man may hazard as well as another. The public want opinions which are deduced from well-conducted, well-attested experiments; otherwise it is like the doctor who prescribes without taking the trouble to learn the exact symptoms of the case. We had casually heard that a few had made sufficient observations to satisfy them that there was foundation for the theory; so that hereafter they would have no fear of buying a cow worthless as a milker; and we took the liberty, which we hope they will excuse, of referring to them in our last number. To these we may now add the name of Mr. COLT, of Paterson, New-Jersey. Still we apprehend that very few have thoroughly, and in many instances, first carefully studied the system, as laid down in the MONTHLY JOURNAL OF AGRICULTURE, and in the “Cow-Book,” and then applied it so as to speak with precision and confidence.

We have now, however, the pleasure to submit the following letter, just received, and which we hand to the printer for the benefit of our readers—word for word, and letter for letter—from one among the most *intelligent, trustworthy and respectable practical farmers* in the State of Massachusetts. It will be seen that it is in answer to a letter from the Editor of THE FARMERS' LIBRARY, which he was prompted to write from hearing the facts detailed in it, or some of them, mentioned publicly by the writer at the late Worcester Cattle Show. It is probable that since then Mr. Brooks may have taken care to ratify his previous impressions by farther trials. Let us ask if any examinations of a single person could be more conclusive? Yet his testimony is more than borne out by that of the several Committees of different Agricultural Societies, based on investigations conducted with great care, and in a great number of cases, and with precautions to guard against the possibility of mistake or deception. To these we have already referred, giving brief extracts, but the whole reports are worthy of being read.

Some have, as we think with more squeamishness than good sense, objected to the *nature of the engravings* which make a part of the Cow-Book; but, if that be not the suggestion of mock-modesty, we should be glad to be informed how else it was possible to spread, far and wide, such an explanation of the system,

true or false, as would enable the plainest farmer to judge for himself? The celebrated "JOHN RANDOLPH of Roanoke" once complained to us, as Editor of the old Turf Register and Sporting Magazine, for having allowed a correspondent to use the phrase, *sired*—"Black Maria was *sired* by Eclipse," instead of "*got* by Eclipse,"—saying it would be quite as well to say that she was "*dam'd* by Lady Lightfoot;" and then told the story of a certain old maid in Virginia who was so fastidious that she always called a certain old coin, that some of our readers may remember, a *water-reen*!

At all events, the publishers were at a heavy expense in having these engravings prepared for the Journal; and we had the satisfaction, when they presented M. Guénon's discovery for sale for the merest trifle, in pamphlet form, to attach to it other matter worth the full price of the whole; so that no one was obliged to buy in the first place, and, if he did, could not fail to get his penny worth.—After all, does not this letter of Mr. Brooks settle the question? May it not now, in M. GUENON'S own tongue, be considered *un fait accompli*?

PRINCETON, Mass., October 15, 1846.

Dear Sir: I received your favor of the 3th inst. desiring me to state my opinion of the value of M. GUENON'S *Treatise on Milch Cows*, translated from the French, and published in THE FARMERS' LIBRARY. On my first meeting with this Treatise, I was so impressed with its value, from my previous knowledge of some general marks whereby the milking properties of cows may, in some measure, be determined, and from the fact that I had myself noticed the oval marks above the hind teats, mentioned by M. Guénon as indicating good milking qualities, that I immediately commenced the study and application of his method to every cow that came under my observation. I have examined more than one hundred cows, and after carefully marking their escutcheons, I have become satisfied that M. Guénon's discovery is one of great merit, and can be relied upon as true. I have no doubt that I can judge very nearly as to the quantity and quality of the milk any cow will give at the height of her flow, and also the time she will continue in milk after being with calf.

The way taken to convince myself of the truth of M. Guénon's method has been to visit the cow-yards of some of our principal dairy-farmers, and examine the escutcheons and marks on their cows, and make up my judgment as to the quantity and quality of milk each cow would give at the height of her flow, and how long she would continue in milk after being with calf; then inquire of the owners how much milk their several cows would give at the height of their flow, and how long they would hold out after being with calf; comparing the owner's account with my own judgment. I find I have been mistaken in only five cases, out of more than one hundred examined.

I have great confidence in M. Guénon's method of testing the milking properties of cows, and consider it one of the great discoveries of the age. The advantage of this discovery to our dairy farmers, enabling them, as I think it does, to determine the milking properties of their young stock at an early age, must be very great, and will be appreciated by every one who is in the slightest degree acquainted with the subject. In my opinion, no dairy farmer, after acquainting himself with M. Guénon's discovery, need possess himself of a bad milking cow.

M. Guénon informs us that his system is applicable to calves three or four months old. I have traced the escutcheons upon calves as early as two or three weeks old, and I see no reason why their value as future milkers may not be judged of at this age as well as at any other age.

Yours respectfully,

JOHN BROOKS.

To J. S. SKINNER, Esq., Editor of The Farmers' Library, New-York City. 7

A VISIT TO THE FARMER OF MARSHFIELD.

WITH SOME ACCOUNT OF HIS FARM MANAGEMENT.

WE had once the pleasure of making a visit to this man of gigantic mind, among his turnips and his cattle, a day's journey from Boston down on the sea-board, in sight of Plymouth Rock. The pilotage of a brace of good friends—their odd jokes and rare stories causing the sides to split with laughter on the way—and all attendant circumstances, to its close, conspire to mark this visit to "black Dan" as one among the many green spots in the so far bygone journey of life—the onward view of which is, alas! rather *dry* and sterile to look upon, without even what the farmers call a "*wet* cloud," promising refreshing showers.

As to the Farmer of Marshfield, we have our doubts whether any man who has so completely within his grasp the most glorious and covetable of all triumphs, the triumphs of intellect, and all the pleasures that wait on the command of every social enjoyment, ever more eagerly and heartily withdrew from them all, to the more quiet and careless exercises and amusements of rural life, than does the "great Expounder," when he can get away from Boston to the sea-shore. In his fondness for Agriculture, there is nothing of idleness or affectation. Of this we can judge and may speak from what we have heard and what we have seen.

At home or abroad, in country or city, Mr. Webster is habitually an early riser. At Marshfield, his early walks are to look at his stables—his horses, his cattle, his sheep, ay, and his ducks and geese, as they play on the bosom of an artificial lake near his residence. Sometimes he takes a gun or a line, and with these fetches down a duck or lands a fish for his guests' breakfast, while they lie snoring in their beds.

His cattle, more especially his oxen, and the young things bred on the farm, seem to attract his particular regards. On the occasion referred to he could boast the largest and the best field of *ruta bagas* in all the Bay State. In a very plain, strong buggy wagon, we traversed his 1200 acres before breakfast, taking one elevated point of view that commands a prospect of the whole farm, and of the waters of the dark blue sea, spread out in the limitless and unruffled expanse of a calm and delightful "summer's morning." On its shores we remember to have seen, for the first time, that remarkable substance called *kelp*—the more remarkable when used as a manure, in that while it has been proved in Scotland to equal barn-yard manure in several experiments, on turnips and other crops, like plaster of Paris, its efficacy seems to bear no proportion to the quantity used. On the contrary, although it appears to have largely contributed to the increase of crops, that increase has been greatest where the smallest quantity has been used.—"From the quantity of alkali which it contains," says a writer on the subject, "it may naturally be expected to operate by rendering the animal and vegetable matter soluble and a fit food for plants; but, from a series of facts which have been noticed, kelp would seem to possess other qualities as a manure."

At a fishing lodge on a creek which meanders through Marshfield, near its entrance to the ocean, Mr. Webster keeps his boats, and all the tackle and appliances constantly in order for his favorite diversion—being, to all seeming, a more willing disciple of "Sir Isaae," than of "Sir Edward." There you find his rods,

lines, winces, floats, hooks, nuts, plummets, baiting needles, disgorgers, cleaning ring, split shot, pliers for putting them on line, caps for float, kettle for bait, India rubber, thumb winder, shoemaker's wax, bit of soft leather, and pocket-book of fishing tackle, with reel to hold lines, and his hooks 'of sizes;' and then, as for cooking the fish on the shore, when it is caught, he has few rivals, especially in the *chowder line*. But, returning to his *penchant* for Agriculture, and talking of fish, considering how much he must have been engrossed in England in seeing and being seen by the "big fish" of that wonderful nation, it is wonderful to those with whom that homely subject is a favorite topic of inquiry, how familiar he had managed to make himself with the *great branches of her Agriculture*, and especially with all the modern inventions and resources to which recourse has been had, of late years, for the prodigious improvements in that great art, and by which they have been enabled, until now, to keep pace with their prodigious increase of population. On these leading points in the progress of agricultural industry he discourses not so much in detail as he does philosophically. But that every one knows to be the character of his mind. He likes to reach after the bottom of things!

His guests, on their arrival within his gates, are shown, after what we are told is the English fashion—and what we are sure must be everywhere a good one—at once to their apartments, which are *their own* for the nonce; and are at once and very quietly made to feel "*at home*." If, after that, from day to day, inclination does not invite, or the weather forbids, them to go abroad, through garden or grounds, why there is the delightful resource of a noble library, teeming with choicest editions of works in all the departments of literature, and all so well and beautifully printed and bound as that the very handling is a luxury.

We know very well that, in alluding thus to a gentleman's personal and domestic habits in retirement, we rather invade a sanctuary that should be inviolate; still it is one of the penalties to which extraordinary men have to submit, and it may even be not without its moral bearing, should they happen to learn that the public will be curious about their incomings and their outgoings.

We had entertained some hope of hearing from a friend of Mr. W., yeleft Jo. SYKES, something like a systematic account of the economy and management practiced at Marshfield, but fear he has been lost in the fog or the mountains.

Mr. W.'s stables are so peculiarly constructed that, while all the liquid manure passes freely through, to be absorbed by the compost below, the floors are always dry, and moreover admit of being easily taken up and replaced, as occasion may require.

A large proportion of the estate, as its name imports, consists of *salt marsh*, yielding heavy crops of coarsish hay, used for cattle, and forming a great resource for making manure. Under some immemorial custom that, being curious, we would like, if we could, to explain, the surrounding farmers, even from a great distance, drive down to this immense salt meadow, and, without a word to any one, fall to cutting and curing hay, and, when they have finished, leave one-half stacked on the ground for the proprietor, and bear off the other without let or hindrance. Whether this right or privilege is inheritable, or under what limitations and restrictions they enjoy it, we know not. It seems to be an antiquated right or custom, handed down, along with their blue stockings and big buckles, as we guess, from the days of the Puritans. We sometimes almost wish that everything else had remained as unchangeable, except that of *riding on bulls*, as old John Alden rode to that same Cape to be married, on one of the descendants

of the bull and three heifers imported by Governor Winslow, in the good ship *Charity*, in 1624.

Speaking of big fish and of English Agriculture, our honest but rather crusty old friend, JOHN BULL, must begin to have a high notion of the *agronomical* talents and capabilities of his daughter, America, from the impressions which appear to have been made by her *three successive Ministers*. We, who notice such things, used to admire how Mr. EVERETT made the old gentleman *roar*, at his agricultural festivals, to which the American Minister seemed always a welcome if not a favorite guest. And Mr. STEVENSON, before him, was not slow in getting into the old gentleman's good graces. But in easy and graceful, not to say somewhat self-confident manner, and in fresh appearance and manly bearing, Mr. S. might well pass for one of John's own get; and, as John Bull is well known not to be deficient in the conservative virtue of self-esteem, Mr. S. got along famously with the great English farmers, titled and untitled, and brought away with him, as we happen to know, not only the high esteem of the crack men, but the best sheep of the crack flocks, of the kingdom—even of that great South-Down prize breeder, Mr. Webb. Moreover, in hunting and shooting, over brook and through briar, with his Virginia horsemanship and dexterity, Mr. S. could not fail to *shoot ahead* in the regards of a people who pass so much of their time in the noble exercises of the field and the luxurious enjoyments, both of sense and intellect, for which such exercises furnish the keenest zest. And then last we sent to them again Mr. McLANE, a very zealous inquirer into the principles of Agriculture, and being, too, like his immediate predecessor, a constant reader of *this journal*, we are bound to suppose him to be a good *practical farmer*!—He had only to bind up, on this second visit, what he had before gathered of John's partiality. We know he was on the most friendly footing with some of the most opulent and best English agriculturists, and familiar with Ruffin's great essay on "calcareous manures," with which he plied them, so that some of them will no longer inquire, "What American has written a book?" But of him it should be enough, if he had done nothing more, to say, "Blessed are the peace-makers!" though, in our republican country, neither Franklin, nor Godfrey, nor Rittenhouse, nor Whitney, nor Fulton, nor Clinton, would stand any chance against a man in regimentals, who could prove that he pointed a gun that killed forty men at one discharge!

And now, in respect of the following letter, we confess to the weakness of a pride in having our labors for the greatest and the most neglected interest of the country well thought of by men of eminent usefulness and ability; but, truth to tell, we should not have so much valued the following voluntary offering of approbation, coming from Mr. WEBSTER the statesman, or the politician, (for with politics we have nothing to do,) nor even from him as a dilettante farmer; but we do value, and venture to record it, as from a man of profound sense in all things to which he gives his mind; and we have long known it to be addicted, with unfeigned predilection, to *Agriculture*.

NEW-YORK, November 4, 1846.

Dear Sir: I have looked through the 4th and 5th numbers of the current volume of THE FARMERS' LIBRARY, and I think I ought to take this occasion to express my sense of the value of the whole work. Its plan is comprehensive and excellent, and the execution thus far successfully carried out. In my opinion, the work ought to be distributed by the various Agricultural Societies, to the end that practical knowledge may be diffused, and a spirit of inquiry and improvement awakened among young farmers.

There are two things which you appear to bear in mind, and which I think of great im-

portance. The first is, that, as you republish largely from European writers, your readers should be constantly reminded that differences of climate and soil demand, always, with us, well considered modifications of European practice in most branches of Agriculture. A too close imitation of the modes adopted in other countries would often be quite injurious here. In addition to differences of soil and climate, the higher rate of wages which, fortunately for the general good, exists with us, must itself make a material change in all agricultural calculations.

The second thing which I would presume to suggest is, the importance of laying your stores of information before your readers in the plainest possible language. Many valuable treatises are, to general readers, nothing but a sealed book, from the use of technical words and phrases. I may say this without disrespect to the intelligence or learning of farmers in general, since it is certainly my own case. Scientific works on Agriculture must be abridged, explained, interpreted, translated out of technical language into our common mother tongue, or else their utility must always be in a great degree lost to the great body of actual farmers. Most of us are not chemists, for instance, and do not understand the technical language of that science; and the improvements in Agriculture, which are every day resulting from chemical experiments, should be so stated, if possible, as that all may understand and apply them.

With the best wishes for the continued success of your valuable labors, I am, dear sir,

Your obedient servant,

DAN. WEBSTER.

JNO. S. SKINNER, Esq.

AMERICAN AGRICULTURISTS.

THEIR "PASSIVE SUBMISSION AND NON-RESISTANCE" TO POLITICAL IMPOSITIONS.

WE take pleasure in calling the attention of every friend of the agricultural interest, in the Union, to the following Memorial, now being circulated through the country for signature, and for presentation to the Legislatures of the several States.

It is to be hoped that it will find a place in all agricultural and other papers friendly to the landed interest, and that all Agricultural Societies and Farmers' Clubs will take it in hand and promote its success, as a measure of *practical service to the interest they represent*.

To every movement there must be a beginning; and, surely, it is time that agriculturists were moving in good earnest for some share of that patronage and protection so freely bestowed on other classes, unless, indeed, they are sleeping the sleep of death!

On this topic of general concern, at least, all may unite, heart and hand, without respect of *parties*.

When manufacturers conceive their interests are about to be assailed by public measures, see, no matter to what party or branch of manufactures they belong, how they *all* rush together into one compact mass, with all their backs up and purses open, like a herd of wild hogs in the woods, at the squeal of the smallest suckling among them—the old boar pointing the wedge, in the programme of defence, supported on all sides by the fiercest and strongest of his companions.

Even the cattle teach us a lesson of common fellowship and self-protection; for, let but an old cow snuff one drop of the spilt blood of her kind, and the alarm is instantly sounded, and you will see the whole drove come together, bellowing and raving mad! And shall we fall behind the very beasts of the field in fellow

feeling, self-respect and self-protection, imitating only that meekest of them all which stands quietly to be sheared? See, in England, at the sound of a single voice, how the *free traders* met, again and again—subscribed their thousands and their tens of thousands; how they sent in memorial after memorial, and agitated and agitated, until they carried their point, and rewarded their great advocate with a donation of \$360,000! Here, in our country, we have schools properly provided for the Army and the Navy; Observatories to survey the heavens; Light-houses to guide the mariner: and Telegraphs to convey information, even quicker than light itself, between speculators and merchants embodied in cities, giving them the first warning, from one end of the Continent to the other, of all changes in the value of agricultural products; all this under control of the Government, and avowedly to collect and diffuse information to and among other classes, whose employment and subsistence is derived from the *fruits of agricultural labor and the products of the earth*; and can nothing be done by this *people's* Government to enlighten and prosper those who *toil at the plow*?

Is this our boasted Government of the people, powerful in all else, and powerless only when the people call for a share of the common treasure?

But what said Hercules to the wagoner imploring his assistance? If men wish to be helped, they must first learn to help themselves. Farmers, you have the power of numbers, the power of productive labor, the claim of much the greatest contribution to the national means; you have all sorts of power and all sorts of title to superior influence in the Government on your side, *except* the power of *knowledge and of enterprise*; and there *you are beaten by every class of society*! Look at your relative numbers. *Persons engaged in learned professions*, 65,255; in internal navigation, 33,076; in navigating the ocean, 56,021; in manufactures, 791,749; in commerce, 117,607; in *Agriculture*, 3,719,951.

Then look again at the *value of the annual products of your industry*, constituting the solid wealth of the nation, inasmuch as it affords subsistence to the whole population of the country, and the means of increasing its population and power; and as it furnishes the subject and elements of employment and subsistence to *every other class*. Look, we repeat, at its annual value—\$654,387,579! being more than the value of the annual products from *manufactures, commerce, mining, forests and fisheries, all united*. And yet, would you believe it? until a comparatively recent date, neither the National nor State Legislatures have paid to you the compliment of even *appointing Committees* on a concern thus transcending in itself *the aggregates of all others*! Nay, it is even doubtful whether some of the State Legislatures go through that formality even to the present day. They and the National Legislature have *working Committees* on Elections, on Commerce, on Manufactures, on Finance, on Grievances and Courts of Justice—on everything that wears any appearance or pretension of a public interest—but where do you find the Reports of Committees in exposition of the *wants, grievances, condition and claims of Agriculture*?—of its comparative contributions and its right to a distributive share of the public treasure so freely parceled out for other classes and objects? True, Committees on Agriculture have sometimes been appointed of late years, but, hearing nothing from their constituents, they naturally conclude that all idea on their part, if they ever had any, of any claim on the attention of the Government, has become an “obsolete idea:” and so, when called on for their Reports, the return of the Agricultural Committee is—*non est inventus*—no such interests to be found! *Let this memorial, then, give them something to do*—for again it may be asked, Who ever were helped—who

ever deserved to be helped—that had not the energy and courage to help themselves.

Farmers, you have, both in and out of Congress, numbers and power on your side. All you want is self-respect—respect for your own rights—energy—combination. On this one subject, then, *be persuaded to lay aside party spirit.*—Move in a body—make yourselves heard—and you will soon cause yourselves to be *felt*. Who will begin the work? Rely on it that knowledge—*knowledge* is at the bottom of every valuable progressive and enduring improvement in the condition of mankind. Your Government is expending *your* money to give knowledge, and to throw light, and to insure safety and honor to every concern of life except yours. Why, then, may you not demand *something* for the dissemination of knowledge in the sciences, on the application of which the fruitfulness of the earth depends, as much as does success in any other profession, art or manufacture? Next, then, after your prayer to “our Father who art in Heaven,” repeat you the prayer of the victorious warrior on the walls of Troy—“*Ye Gods, give us but light!*” and they who, in the halls of power, shall first hearken to your righteous demands, shall be registered and remembered as the grateful benefactors of those to whom they owe their elevated and glorious trust—glorious, if wisely executed for the welfare of society.

For one, at least, among the humblest of their constituents, we shall watch to denounce or to bless. We crave the assistance of the press—that powerful lever which, in swaying public sentiment, sways the world. Proud will we be to take the lowest rank, and to raise even the feeblest voice in an enterprise commended by every consideration of beneficence and public usefulness, to every sound head and every honest heart.

MEMORIAL

From the Agriculturists of the United States to their respective State Legislatures.

THE undersigned, on behalf of the agricultural interest, to which they belong, beg leave to request your attention to what they feel to be their just, but too long neglected claim on the General Government.

Not wishing to deal in vague generalities, the measure we solicit is that you would urge our Representatives and Senators in Congress to use their influence to *procure an appropriation from the proceeds of the public lands, or from the general treasure, for the use of each State, in proportion to its representation in Congress, to be applied, in each State, expressly to the establishment of a NORMAL SCHOOL, for the instruction and preparation of teachers in agricultural chemistry, mineralogy, vegetable and animal physiology, civil engineering, rural architecture, and practical surveying*—in such arts and sciences, in a word, as will enlighten practical Agriculture, and render more efficient and profitable the capital and labor employed in it. Teachers thus prepared would be ready to take charge of minor agricultural schools, in each county in every State of the Union; and thus would the foundation be laid for spreading among the mass of the people a knowledge of those sciences, on the application of which, according to the opinion of the ablest writers of the age, “Agriculture must hereafter depend for all material improvements.”

In the name of justice to the landed interest, and in anticipation of objections as to *want of means or power*, the undersigned would refer to the very large expenditures under all administrations, not only for the establishment of naval and military academies and schools, and the publication of surveys, maps, and journals, without number, of military officers, exploring sea and land, but to the boundless acquisition of foreign territory, by acts of Congress. We may also refer to large and repeated appropriations, not merely for the establishment of Observatories, and lines of Telegraph, under the control of the General Government,

but to an object strictly analogous to the one we seek, to wit, the *annual Agricultural Reports from the Patent-Office*.

All these appropriations of the public money—chiefly, it is true, as connected with the military operations of the Government—have been avowedly for the purpose of collecting and distributing warlike or other information.

These facts and considerations induce your memorialists to hope that Congress will not now refuse to the people a portion of their own money, for the purpose of providing within each State, conformably with its own policy, institutions and courses of industry, schools for the instruction, also, of the *rising generation of planters and farmers* in the *principles* of that great pursuit which has been well pronounced “the nursing mother of *all the arts*,”—a pursuit upon which Congressional Reports, useful though they be in their way, can yet throw but the partial light of facts and statements promiscuously gathered up, not always well digested, and, after all, distributed or not, according to the individual pleasure and discretion of Members of Congress.

For the warlike machinery and purposes of this Republican Government, embracing the objects above referred to, *several hundred millions* of dollars have been expended since our last war with a trans Atlantic power; and this enormous expenditure has really been collected, in *very large proportion*, from the landed interest, since it is that class which has chiefly consumed the imports on which the revenue has been levied.

Your memorialists are far from repining at the liberal pay, life commissions, certain promotion, pensions, residences, hospitals, schools and academies built, provided, and kept up, at the public expense, for the two military branches of the Government; but they humbly think that the time has arrived when the people, the yeomanry of the country—those by whose toil its solid wealth is dug out of the ground—may inquire why, in what view of the “general welfare,” it is that since any amount can be found to promote advancement in the science, and successful practice in the art of war, nothing can be granted for the better instruction of the rising generation of freemen in the science and practice of that great peaceful pursuit which employs, feeds and pays all others?

Under the most despotic monarchies, men of genius who have conferred signal benefits on the industrial pursuits of the people, by scientific discoveries and useful inventions, have been lavishly rewarded, and raised to the highest honors.—Mechanics, chemists, astronomers, great naturalists, and learned and enterprising men in every walk of civil life, have been there endowed with titles and fortune. If, under such Governments, stars and garters, and badges of power and respect, have stimulated to heroic deeds in fields of battle, so have they been held up as certain prizes to intellectual excellence, and great accomplishments in the arts and employments of peaceful industry. If schools have there been maintained for training youth in the art of war, so have they been maintained for teaching the application of the arts and sciences to all the industrial pursuits of life.

As republican freeholders, then, we would respectfully inquire whether it be becoming or politic for this nation, whose Government rests for security on the popular intelligence, to imitate European Governments *only* in the favor and patronage they confer, with self-preserving instinct, on that Executive department of their power upon which *they* lean to protect their existence against the progress of free principles, and the force of public opinion seeking to carry them out?

It would indeed be passing strange, as it seems to your memorialists, that in a Government called free, deriving so chiefly all its resources from the agricultural interest, its powers should be so organized as to preclude the application of any portion of the public treasure to confessedly, and by far, the greatest of all public concerns! We would respectfully forbear from remarking, as it would seem to deserve, on that monstrous perversion and abuse of sovereign authority, in a Government called republican, which should reserve all life tenures, and all pensions, and all enlightenment, for the military, while it renounces the glorious faculty of aiding and rewarding the labors of intellect in the humbler, but so much more useful paths of peaceful, laborious and productive industry!

In behalf, then, not so much of themselves, as of the rising generation of agriculturists, on whom our country and its liberties must mainly depend under all vicissitudes, we call upon you, to whom we have consigned for the time the sovereign authority of the State, to demand from the General Government that something be now, at last, done to *foster Agriculture*, by diffusing that knowledge

which is power, no less in the field of labor than of blood. They believe they have a right to expect for this great national purpose, so identical with the general welfare, appropriations bearing some proportion to the amount which the products of Agriculture bear to the aggregate wealth of the nation, and to the degree of dependence of the Government itself, and all classes under it, on that class for employment, protection, safety and support.

THE DISEASE IN POTATOES.

WHEN PLANTED FROM THE SEED, ARE POTATOES MORE EXEMPT THAN
WHEN PLANTED FROM OLDER TUBERS?

TOLEDO, Ohio, November 3, 1846.

Mr. Editor: I am well aware that many theories have been advanced to account for the "disease," as it is called, so universally prevalent among potatoes. Some affirm that numerous "animalcules" are the cause; others "fungi," and others, without any apparent reason whatever, that it is owing to wet weather which we have untimely (?) experienced.

From repeated observations and experiments recently made in the cultivation of this esculent, I am fully persuaded that the "disease," or "rot," is nothing more than the deterioration incident to their having *nearly run out*.

I notice in your valuable Journal for September a communication from a Baltimore correspondent (who seems to favor the above opinion), recommending importations of the original plant from its natal place, South America, with which to start a new run of crops. This plan, if fully carried out, I doubt not would result in giving us sound potatoes, like those produced after the plant was first introduced into Europe and the United States; but the improbability of its ever being done, to an extent sufficient to establish an entire new run of crops, detracts, I think, materially from its importance to us at the present time.

The loss of at least one-half of my crop in the year 1843, being a large increase upon previous years, satisfied me that they had actually run out, or were fast approximating to it, and suggested the feasibility of reproducing them from the *seed of the apple*. Accordingly, the next year (1844) I planted the *seed of the apple* in about twenty hills near the center of the field, while all around them were planted potatoes of the previous year. After gathering all the other potatoes in the field, I opened the remaining twenty hills, which I found yielded on an average a dozen to a hill, and about the size of a large walnut. These I planted last year in detached parts of the field, and gathered therefrom potatoes of the usual size, entirely free from the "disease" or "rot" which infected those raised from the old potatoes. This year I planted my whole field with these potatoes, and have gathered a usual-sized crop, entirely free from "disease," as before.

With the above facts in view, I would ask, cannot a new run of crops be produced from potatoes raised from the seed of the old or deteriorated plants, equal to any that could be raised from the natal plant itself? If so, let it be urged upon the attention of farmers throughout the United States, and thereby save the food of thousands—that valuable esculent, the potato.

G. B.

In publishing the above, we feel called upon to say that the weight of testimony greatly preponderates against relying on potatoes raised from tubers which have recently been produced from the *seed*.

The most elaborate and careful investigation, after that of the Commissioners appointed by the British Government, is to be found in the October number of the Journal of the "HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND."

They framed and sent to hundreds of the most distinguished agriculturists the following queries :

"1. At what period in the season, and after what state of the weather, the disease manifested itself? What were the general appearances presented by the stems, leaves and flowers, and by the tubers, when the taint had extended itself to them?

"2. Whether any of the varieties of potatoes commonly cultivated have escaped the disease, or been less affected than the others? Whether potatoes recently obtained from seeds have been less subject to it than those which have been long raised from sets or tubers?—Whether any particular condition of the soil, as to wetness, previous cultivation, or the kinds of manures used, appear to have had any influence in promoting, retarding or preventing the disease?

"3. What have been the modes employed in storing the potatoes, and what are the means which have been found most successful in preserving the healthy tubers, and preventing the extension of the taint from the diseased to the sound ones?"

We have not room in this number for even the substance of the answers to these queries; but it is admirable to see the promptness and explicitness of the replies from no less than 132 farmers. The Society first embody in a very condensed statement the substance of these answers to each question, and then by numbers refer to and publish the answers themselves, that the reader may see the precise ground of their summary statement. We can only give their statement of the answers received to the branch of the second query, "Whether potatoes recently obtained from seeds have been less subject to it than those which have been long raised from sets or tubers?" and on this point the Society say:

"The answers to this inquiry are numerous. Nearly all the reporters state that potatoes raised recently from the seeds were *equally subject* to the disease as those which had been long propagated from the tubers; and, in the opinion of many of the reporters, the potatoes recently raised from seeds were *more liable to be affected than the others.*"

They then refer to twenty-three reports, from as many different persons, and say:

"All these reports concur as to the fact that potatoes from seeds were as bad as, or worse than, others. The contrary opinion is reported by only three gentlemen, viz.

"Mr. John Hogarth, Berwickshire, who states that some raised from seed were free from disease, and kept well.

"Mr. Alexander J. Main, Edinburghshire, who says that sets of potatoes raised for four years from seed were not so much affected as those from older tubers.

"Mr. Francis McMin, Lanarkshire, who mentions that the only potatoes raised from seed in his neighborhood have kept."

Nor is it probable that potatoes lately raised from seed will be more exempt than potatoes of the oldest stock, if the *cause* of the disease is such as stated in the next chapter.

Those who have observed the progress of investigation on this interesting question with proper and enlarged views, and a fair disposition to do justice to those to whose acquirements and labors we might be indebted for the best elucidation of the subject, cannot have failed to notice the very quiet and unostentatious, but at the same time very efficient part performed by Mr. TESCHEMACHER, of Boston one of the most disinterested and accomplished vegetable chemists of the age.

In giving place to the following from a late number of the London Gardeners Chronicle, it would be a gross omission not to refer to the fact that as far back as October, 1844, Mr. T. took the opportunity of examining chemically and with great care the first diseased potatoes which came within his notice, and pronounced the opinion since promulgated by Morren, and now again insisted upon in this most recent Report, made officially to the Danish Government, through the Polytechnic Institution of Copenhagen, being written by Professor LIEBMANN, and, in Denmark, thought to give a satisfactory solution of the cause of the sickness. It is, however, proper to state that Professor LINDLEY, Editor of the Lon-

don Gardeners' Chronicle, in which we find the following article, and who was one of the Commissioners appointed to make examinations into this subject, does not seem by any means to be satisfied either as to the real cause or as to any effectual remedy. He recommends *fall planting*, for reasons which we shall probably give in our next. There is, he says, no danger of potatoes being killed by frost in winter, in the ground.

"Although the potato complaint already in the course of several years has been known in various places in Europe, it did not become the subject of general attention before last year, when almost all over Europe it caused great devastation. Also this year the sickness has broken out suddenly, and with great violence at the same time, all over the country, and has, in short time, destroyed the greatest part of the parts of the potato plant vegetating above ground; but it is not yet decided whether the complaint will have as great influence on the tubers as was the case last year. According to all accounts we have been able to collect, as well as from our own observations, the complaint this year has chiefly attacked the early ripe potatoes; but those later ripe have been much more free. Although where the potato complaint last year made its devastations, it has become subject of investigation carefully conducted by individuals as well as by Committees appointed to this effect, employing large sums of public money for the promotion of these inquiries; still, notwithstanding all that is done in this direction, and that our literature has been increased to an enormous extent, still the result of all these endeavors is comparatively nothing. None of the remedies so variously proposed have been effective. Last year the attention was only drawn to the illness when far advanced; its first beginning, as well as its cause, came not at all under experienced and scientific men's observation. This year, when attention has been early directed to the vegetative process of the potatoes, it has been possible to observe all the phenomena of the illness from its first beginning, and there *can no longer be doubt of the cause of the illness*. It is a parasitical fungus belonging to the *milddew or thread fungi* which attacks the parts of the potato above ground, and which shortly, in the way peculiar to fungi, destroys the cellular texture of leaves, flower and stem; this fungus presents a fine cobweb texture of uncolored branched fibres, and increases with great speed by elastic germinating grains, which only appear by a considerably magnifying power. These germinating grains are so small and so light that they are floating about in the air, and descend with the dew-drops on the sound plants, develop themselves in few hours to threads, and destroy the leaves. It is certain that the illness is produced by this parasitical fungus.

"The sickness in the tubers appears only some time after the part of the plant above ground is destroyed, and shows itself by destroying the cellular texture which, by the destruction of the leaves, is deprived of the regular nourishment which is derived from these parts.

"The existence of the potato thread fungus is like all fungi generally, only brief, and it is only plainly discernible on leaves not yet blackened or faded. We feel bold to assert that the period of vegetation of this parasitical fungus this year, has been confined to the first fourteen days of August, and that it will only be the consequences of the ravages of the fungus during these fourteen days which will be felt this autumn.

"Since it is now made apparent that the illness is caused by this parasitical fungus, it is evident that all previous suppositions about the degeneration of the potato plant as cause of the illness are groundless, and that orders for seed potatoes from places hitherto free would be useless. That may easily be conjectured when the cause of the illness is known; and what confirms this opinion is, that Liebmann, on a journey through the island of Tionia, in the beginning of this month, learned that several farmers who, at great cost, had got seed potatoes from places in the United States free from illness, had, notwithstanding, got several such fields attacked as much as others with the common seed.

"The Committee feels therefore pleased that already, before these experiments were made, it advised not to import from Spain or the United States, feeling convinced that there was small probability of the complaint being from degeneration of the plant. *It is therefore evident* that all trials to destroy the complaint will be useless, inasmuch as it originates in a parasitic fungus, the invisible germinating grain of which is carried about in the air, and which will develop itself wherever it finds a suitable soil, viz., potato plants, be they natives or from abroad, or whether the seed tubers have been washed or not in water or solutions of salt.

"The potato complaint is an evil which we hope time will heal as it has brought it.

E. A. SCHARLING,
F. LIEBMANN,
A. WEILBACH.

"Copenhagen, August 31."

Would it not be well, by the by, however indifferent he may himself be about it, as a matter of justice and of right to him, and to the country, that Mr. Teschemacher's communication on this subject, made, *by request*, to the "NEW-YORK STATE AGRICULTURAL SOCIETY," as far back as Dec. 1845, and in which he too assigned fungus as the cause for this disease, should be allowed to see the light? Was it mislaid, that it did not form a part of their annual publication? for it is not easy to imagine any paper which, in that stage of this question, could have possessed greater interest for agricultural science and literature—coming from such a mind and such a pen, and proclaiming then the identical opinion to which some of

the ablest vegetable chemists in Europe have since arrived. For one, if that paper be still in existence, we should be glad to see and compare it with more recent researches, and even to preserve it as a matter merely of justice to the individual, and of agricultural history : and, as far as it goes, as a proof of our claim to "priority of discovery." With men of the true stamp, discoveries of the *mind* are far more precious than discoveries of *mines* ; and the society or community that does not well guard its fellow members in the possession of the honors thus hardly earned by intellectual courage and labor, but illy consults its own welfare.

It seems, too, not the less remarkable that Mr. TESCHEMACHER's communication to the same Society, accompanied by eight or nine samples of various qualities of guano, with the analysis of each, as we see stated in the Patent-Office Agricultural Report of 1846, page 514, Doc. 140, has been in like manner withheld from the public. Was it that the Prize Essay afterward published happened to embrace enough of similar views and analyses to render the publication of his communication unnecessary ?

It has been gratifying, nevertheless, to see that his Essay on Guano, the most elaborate, scientific and practical we have had, and which was published elsewhere in this country, we believe in that lamented organ of New-England Agriculture, the New-England Farmer, has attracted notice and been published widely and approvingly in England.

These annual volumes put out by the New-York State Agricultural Society are doubtless prepared with due circumspection and impartiality ; still it will not be offensive to any fair mind to have it suggested that our men of science get so inadequately paid, when paid at all, for the hardest sort of labor, that too much pains cannot be taken to see that when they do work for nothing and find themselves, the public be allowed to enjoy the benefit of their gratuitous services, and the opportunity of paying them in costless thanks at least. For every periodical there is trash enough to be had, if the publishers go for quantity. We would not dare ask it of men of real science, with whom minutes are hours, to write for The Farmers' Library, but we are much mistaken if when such men as JACKSON and TESCHEMACHER do put pen to paper on questions of agricultural science, there is much said that would deserve to be suppressed.

AS TO THE REMEDY.—In the same unpublished and unnoticed communication from Teschemacher to the New-York State Agricultural Society, he suggested *salt* as the remedy or preventive of the potato rot, and we have been told that this remedy has been signally efficacious in many cases where it has been tried in the neighborhood of Boston, many having there tried it whose potatoes have escaped, while all around suffered. Below we give instances reported in late numbers of the London Gardeners' Chronicle to the same effect. But here again it is our duty to state (being absolutely unprejudiced and impartial on this subject, as we endeavor to be on all) that in the same number the Editor of that journal, standing high as a botanist, at home and abroad, and having bestowed on this matter perhaps more thought and observation than almost any man living, seems to be utterly at a loss and confounded. After referring to the several remedies recommended, and lime and salt among the rest, he says : " For ourselves, we feel it to be as presumptuous in ourselves as in others to hazard any recommendations, where all is confessedly most uncertain ; nevertheless we cannot shun the responsibility which attaches to our position." He then goes on to recommend " Autumn planting," as the best under the circumstances,

"yet," says he, "we by no means pretend that it is a security against the potato disease."

The following are the items we find in the same number of his paper, going so far to corroborate the opinion expressed by Mr. Teschemacher three years ago, and still entertained by him, fortified by more recent instances in the vicinity of Boston :

SALT A MANURE FOR POTATOES.—I have heard of several instances of sound potatoes being grown where the land was previously dressed with salt, and one very striking instance has come within my own knowledge. I am satisfied that all light soils that have borne diseased potatoes this year, or that is intended for planting potatoes next spring, should be dressed with from 10 to 15 cwt. to the acre, applied half now and half in the spring. This application is simple and cheap, and, at all events, can do no harm.

SALT A PREVENTIVE OF THE POTATO DISEASE.—A very intelligent laboring man, who cultivates about 4 acres of land, informs me that he this year tried the effect of soot and of salt on small portions of his potato crop. The potatoes were planted in drills, and manure from the pigsties was laid over the sets. In two of the rows soot was sprinkled, in small quantities, over the sets before the manure was laid on. In three other rows, salt was similarly applied. When the potatoes were got up, a short time since, only two or three were found diseased where the soot had been applied, and none at all where the salt had been used. Those to which nothing had been applied except the manure, contained a large proportion of diseased potatoes. The soil on which this experiment was tried is light and gravelly.

We boast that ours is the best and the wisest Government in the universe, resting on public virtue and guided by superior intelligence ; and so it may be ; but taking a partial view, one might be led for a moment to conclude that wisdom and virtue are confined to no particular forms, but that "that which is best administered is best."

Here is a question—this dreadful malady which threatens extinction to the most valuable of all esculents ; raging and increasing now for some years, and which, according to the gloomy theory of Malthus, we might suppose had been sent by Providence as a check upon the natural prolificness of the human race ; yet where is the commission appointed, or the reward offered for its investigation, by any Government, General or State, or any Society or Institute in the whole country ? In England, in France, in Germany, commissions consisting of the ablest men to be found in these countries respectively, have been appointed, and well paid, to bring all their powers of investigation, and all the lights of science to bear on a subject admitted on all hands to be of the greatest national consequence ; and even though it were true that neither cause nor remedy have been discovered, to the satisfaction of all, yet the cause of agricultural literature itself has been promoted, and a great service rendered, if only in showing how indispensable are the aids and the instruments of science, to all researches into the principles of vegetable physiology. Ah ! truly, we had forgotten ! We *have made a grand display of public spirit* ! Congress paid about \$20,000, we suppose, for the 250 pages dedicated to this particular object, in that great and brilliant EXPOSITION OF NATIONAL INDUSTRY, THE PATENT OFFICE ANNUAL. More of that anon.

A CURIOUS FACT IN AGRICULTURE.—We find in the New-York Post an account of the production of potatoes in the following manner : A gentleman, in the month of May, conceived that it was necessary to cut one or two more branches from his grape-vine, and he accordingly lopped off the unnecessary branches, which caused them to bleed ; and to remedy this, he split a potato into two pieces, one of which he stuck on the end of the bleeding branch. He then tied a rag fast to the branch, so as to cover the potato and keep it from falling off, and then left it. The rag was not disturbed again until a day or two since, when it was removed and found to contain a crop of four small potatoes, which had grown from the piece stuck on the end of the branch.

THOROUGH DRAINING.

ITS PRACTICAL EFFECTS AND RESULTS.

THIS, now, is one of the great openings for improvement of farms in the Old States. By its means, an immense quantity of land, worse than waste, may be brought into play, the value of which cannot well be overrated; for, in the first place, the land to be by this means reclaimed is generally the best on the estate naturally; and, secondly, it may be then laid down to grass, and produce for years heavy crops, without *expense of cultivation*; and we need not add that the most lamentable deficiency in the resources of the American farmer is *want of grass*.

No agriculturist of the right sort of sense and ambition can “sleep easy in his bed,” if he does not feel sure that, while he is drawing from his land the fair results of well-directed labor, his estate is at the same time in a course of *progressive improvement*! That he should aim at, as one of the principal items to be carried to the credit side, in his account of profit and loss; and, without looking closely to that, he is just as sure to be finally overtaken with bankruptcy as the merchant, who would not be trusted by any one on ‘Change who should know him to be guilty of neglect in *keeping accounts*.

Well, how is he to make sure of this progressive improvement in the productiveness and the value of his estate, unless he make sure of an *adequate supply of manure*? Ay, my dear reader, you may blink the matter, if you will, for the moment—you may try to postpone and get round it—but to that you must come at last. There is no other way—no short cut to escape from ruin to your land and yourself—unless, by some means, you *feed it with manure*, at least equal to what your crops and your animals carry off it. For the farmer is beginning now to understand that, in the very blood and bones of every beef he consumes or sells, there is a certain amount of the productive capacity of his land subtracted from it. You might just as well expect a mill-hopper to go on yielding meal, without pouring in the grist, as your farm to continue, without food, to give full crops; and the most sure, obvious and reliable resource for *manure is grass*. The want of it is as fatal, in most cases, as the loss of the horse-shoe nail, as related by Dr. Franklin—where, for want of the nail, the shoe was lost; and for want of the shoe the horse fell lame, the messenger failed in his journey, and great calamity fell on the State.

In England, where they have a moist climate and plenty of capital, they keep up and greatly increase the fertility of their lands by a single *root*. Yes, the population, the wealth, the power of England is in her *turnips*. We might have them, too, in our country, as we are inclined to believe, to a much greater extent than we do, if farmers would well manure and *thoroughly* prepare their land, and *sow much earlier*. There’s Mr. Sotham, on Mr. Corning’s estate, near Albany, never fails in a heavy crop of Swedes. But at any rate, to come back to our subject, much may be done toward having the means of keeping stock to increase the manure by *draining*. Even the smallest spots—say many half acres, here and there—might and ought to be thus reclaimed. But, then, it must be thoroughly done. There is no work the result of which so much depends on

its being completely *well done*. In this business it is *hit or miss*. It is not more or less—it's *everything or nothing*! On this subject, as to the *means of doing it*, and the *profits* of it when well done, no patron of this journal shall plead ignorance before we are done with it; for we know of no subject more worthy of attention. But we have not room to dwell longer at this time.

Might not farmers associate, and appoint agents in this city to engage Irish ditchers—for they are like muskrats in a swamp—on their arrival, to go and live by the year, at certain wages. But we shall return to and elaborate this idea on some early occasion. We think it might be practicable to get laborers and mechanics in this way, to the advantage of all parties.

DRAINING.

BY THE VERY REV. DR. BUCKLAND.

HE would advise the farmers of Devon and Dorset to go by railway to Lincolnshire and Norfolk, where the most beneficial changes had been realized over entire counties. There were men now living who could remember when 40,000 acres of land belonging to the late Lord Leicester, in Norfolk, which are now worth £40,000 a year, were nothing but rabbit warrens and barren heaths. Lord Yarborough had 30,000 acres of land in Lincolnshire, which formerly let at 4s. 6d. [\$1 03] per acre, and at this low rate ruined almost every farmer who rented it; this same land is now rented at an average of 25s. [\$6 25] per acre, by farmers who are all making such large fortunes that many of them keep their carriages. In Norfolk it was the custom of Lord Leicester, when applied to for a farm, to ask the applicant how much capital he could command. "I have farms," he would say, "of all sizes for every amount of capital—from 2,000 down to 200 acres." This was an admirable plan. He was satisfied that one great cause of bad farming was the ambition of tenants in undertaking a larger farm than they could stock and adequately manure. It was not surprising that the farmer could not succeed who, having a capital of £1,000, took a farm which required £2,000.* The learned Professor then referred to the important operation of draining, as the foundation of all good farming. It was useless to put tons of manure on land that was not dry; in that case it would only float upon the surface, for wet clay could not allow it to go down—it was almost entirely thrown away. Draining rendered the land penetrable by water, and enabled the rain to descend freely through it, carrying to the roots those fertilizing elements of carbonic

acid and ammonia with which rain-water was always charged. Carbonic acid was continually supplied to the air from chimneys, and from putrefying animal and vegetable substances, also from the breath expired from the lungs of animals, and a hundred other sources; it floated in the atmosphere in a gaseous form, and was brought down again by rain. Falling upon drained land, this rain penetrated its surface, and, as he had just said, carried with it to the roots of plants two of their greatest elements of fertility.

It was the landed proprietors' and the farmers' incumbent duty to increase the fertility of the soil, because the soil alone afforded the food which it was our business to provide for ourselves and families. Fifty years ago, Parliament had given a premium for draining to Mr. Elkington; and his system, where it was applicable, had answered the required purpose; but it was not applicable so generally as newer systems, for the publication of which the country was mainly indebted to Mr. Smith, of Deanston. He remembered, when returning from Scotland after visiting Mr. Smith's farm at Deanston four years ago, being taken by Sir Robert Peel into a field of his near Tamworth, which was almost swamped with water, and nearly unproductive. He advised Sir Robert to drain it after the manner of Mr. Smith, which he forthwith did, and the result was in the very first year a splendid crop of turnips, and the second year a crop of barley so luxuriant that the stalks could not support the ears, and fell prostrate to the ground.—The expenses were repaid in two years, and this worthless field was now a most profitable piece of land. The Rev. Doctor then mentioned another instance of the effect of drainage near Wolverhampton, in Staffordshire, by Lord Hatherton. His Lordship had reclaimed a wild tract of 1,500 acres adjoining Camock Chase, on hills higher than those in East Devon, and had increased its value from 5s. to 25s. per acre. After impressing thus forcibly the importance of draining, as the first step in agricultural improvement, the learned Professor proceeded to remark on the application of manures.

* The reader must bear in mind that this means the capital requisite for a *tenant*—not to purchase the land; and this explains, to a great extent, the greater productiveness of English farms. They have a great amount of capital—we nothing, comparatively, but the *naked land*! But all difficulties vanish to men of resolution and *thought*.

APPLICATION OF MANURES.

The reader but too probably nauseates at the very word *manure*! yet what so important?—and besides, like it or not, the doctor must give the medicine he thinks best suited to the case; and so we shall continue to give in doses, broken, though they may not always be small, what may seem best suited to the condition of *our* patients. By the by, when did any one know brokers and merchants to tire of hearing and talking about the rise and fall of produce and of stocks?

In the preceding chapter, we have given some striking facts on the subject of draining, from “the Very Reverend Doctor Buckland,” and the following is a continuation of his lecture.

When shall we have lectures on botany, and natural history, and vegetable chemistry, from our country clergy?

As the elements of manure could only act on plants when in a state of solution, it ought never to be applied as a top-dressing, except in wet weather. It was common to see manure applied to turnips during the dog-days, when the sky was bright and clear, and not a particle of rain falling. In this case, so far from the manure doing any immediate good, its ammonia was speedily evaporated, being extremely volatile, and passed into the atmosphere, instead of the roots of plants. In a dry season, if manures were used at all, they ought to be buried in the ground, and not applied as a top-dressing; in rainy seasons the virtue of manures descended with the rain-water, to the immediate benefit of the growing plants. There were two advantages to be derived from draining, which were—time and money. He who was always behind-hand could not be a good farmer. The early farmer takes his commodities early to market from well-drained land, which is fit to be worked at almost any time, and has threshed his barley, and converted it into cash, while the late farmer's crops are not yet ripe for the harvest. No farm on a wet clay soil can produce half the corn it is capable of growing, if thoroughly drained. Referring to different kinds of manure applied to land after it was prepared by drainage for receiving it, the Professor observed that he need hardly say that the best of all manures was farm-yard dung, though he was sorry to remark the farmers did neither produce or preserve so much of it as they might easily do. Farm-yard dung was the best of all manures, because it gave back directly to the soil the elements of the plants that had been consumed by cattle as their food. But, besides the manure produced on his own land, the good farmer is obliged to borrow and fetch from a distance the elementary substances of imported artificial manures. The farmers of the east side of England go to London for bone-dust, and to Holland for rape-cake and oil-cake. This oil-cake,

together with straw, is used for the winter food of oxen in their farm-yards, which are thus annually charged with an abundance of rich manure. There was another kind of manure, which he wished particularly to impress upon the farmer's attention—he alluded to guano. It was, as they knew, the droppings of sea-fowl, accumulated for ages upon islands off the coasts of Africa and America, and on many islands in the Pacific Ocean. Since its first importation, four years only ago,* guano had been used with the greatest success in various parts of the country. It was notorious that experiments made with it during the present year had almost universally failed; and their failure proved that it ought never to be applied as a top-dressing, except in rainy weather, and when the plant is in a state of active growth. There were many advantages attending the use of guano, not the least of which was its portability, and its power of retaining its properties for many years, if kept dry and excluded from the air. It was much cheaper now than on its introduction into this country, and next year the supply would be such as to reduce its price to half of that charged last year. He knew that no less than 600 ships had left Liverpool alone last year to get guano, and they would bring back at least 60,000 tons. Some of the guano sold in this country was adulterated by art, and some by Nature; but a little precaution on the part of the buyer would prevent his being imposed upon. He had only to put a tea-spoonful into a tumbler full of warm water, and to wash and rinse it, whirling it round briskly, when the sand (if any were mixed with it) might be detected at the bottom. The learned Professor then referred to the night-soil and cloa-

* The Editor of The Farmers' Library, then Editor of the American Farmer, distributed two barrels of it in Maryland twenty years ago; and as far back as that told the whole story of Alpaca sheep—their history, uses, value, &c.—with engravings.

cine, as the most valuable of all animal manures. It was extensively used on the Continent, though not in Britain. In Belgium it was valued at £1 17s. 6d. [\$9] per individual, while Englishmen are traveling to distant regions of the earth—to Africa and America—traversing sea and land, to bring home elements which they may readily obtain at home. Night-soil was most valuable, because it contained the elements of all kinds of food consumed by man, and in applying these to the soil we returned the identical constituents which former crops and animals had taken from it. It contained phosphate of lime, which was indispensable to the growth of animals' bones, and to the nutriment of plants, and which was not supplied from the atmosphere

like carbonic acid and ammonia. He recommended the preserving of all fluid and solid excretions, by mixing with them saw-dust, or ashes, or burnt clay, in a dry place, which would deprive them of their unpleasant smell. The Professor then urged that, in all good farming, there must be a debtor and creditor account between the farmer and his land.—Give and Take must be the rule; if no manure be applied, it was unjust and idle to expect abundant produce. If the farmer starves the land, the land will assuredly starve him. The man who gives nothing deserves nothing. He is a plunderer—a plunderer and a robber of his mother earth—and his speedy ruin is the merited punishment of his ravage.

AGRICULTURAL PRODUCTS OF TEXAS.

BASTROP COUNTY, (now) State of Texas, Sept. 7, 1846.

To the Editor of The Farmers' Library :

MY DEAR SIR : I have just read the August number of THE FARMERS' LIBRARY AND MONTHLY JOURNAL OF AGRICULTURE, and am extremely gratified to see you have recommended the culture of flax and hops. They are both indigenous in Texas, and consequently could be cultivated with profit. If you, like a good "schoolmaster, will do what you promised should be done for every tree of the orchard and the forest, every grain of the field, every vegetable of the garden, and every vine shall tell its own history"—and will please look,

"With equal eye, as friend of all,"

on Texas as on the Old Thirteen, and give us some instruction about growing the sugar-cane, and manufacture of sugar, also Spanish tobacco, hemp, and indigo, to the growth of all which our climate and soil are congenial, I think our musqueat, prairie land will come in competition with the cane-brake region of Alabama for growing Indian corn and cotton. We can, on the virgin soil, with "brute labor," grow seventy-five bushels of the former, and four thousand pounds (seed) of the latter per acre. I send you a few musqueat grass seed (not knowing the botanic name). Sow in a rich, stiff soil; it will grow all winter, and go to seed in August. The beef, butter and milk which it produces are superior to anything of the kind I ever tasted. You would be astonished to see (as you could, if here) an ox fifteen hands high, with horns three feet long, and five feet from point to point, fed solely on grass—fat in winter and summer.

Cordially, with respect, your obedient servant,

AN OLD TEXAN.

P. S. May God speed the pen, enlighten the head, and refine the heart of him who converts the wilderness into a fruitful field! There ought to be a hundred subscribers to THE FARMERS' LIBRARY, not only in this, but every county in the State.

O. T.

LONGEVITY OF PEACH TREES.—There is no part of the United States where the peach tree is more healthy, or attains a greater age, than in Western New-York. It is only improper soil or culture, and bad treatment, that has caused early decay where it has occurred. The best orchards in this section, now in full vigor, are bordering on 20 years old. We have just been shown a collection of fruits, by Col. Colby of Ogden; and among others, a fair-looking, natural peach, from a tree forty years old, yet healthy and productive.

[Genesee Farmer.

CULTIVATION OF THE ORANGE.

THROUGH the kindness of A. H. PALMER, Esq., Director of the American and Foreign Agency at New-York, we have received the Journal of the Agricultural and Horticultural Society of Perth, Western Australia, from which we extract the following observations on the Cultivation of the Citrus Tribe, by W. TANNER, Esq., a member of said Society. From the adaptation of the soil and climate of a large portion of the southern territory of the United States, to the profitable cultivation of the Orange and other species of citrus, we trust that his remarks, together with the subjoined notes by Mr. Browne, will be duly appreciated by a large portion of our readers, particularly those who reside in Florida, where this species of culture has long been practiced with success.

THE genus *citrus* comprising, according to some, eight species, and some of these species containing several varieties, is supposed to have been brought originally from India, and perhaps other parts of Asia, where it is now found growing wild. True, it is also to be seen in a wild state in parts of South America, yet these plants are probably remains of gardens long since abandoned. It is now cultivated in the open air in the East and West Indies, Japan and Australia; and in Europe, in Spain, Portugal, France, Italy, and the Azores. The oranges of St. Michael are now the best that are to be met with in the European market. The plants of this genus, in addition to the usefulness of their products, are worth cultivating were it only for their beauty. In Europe orange trees continue flowering nearly all summer, and the fruit takes two years to come to maturity, so that for a considerable period of each year a healthy tree exhibits every stage of the production, from the flower bud to the ripe fruit in perfection at the same time. In Spain there are old orange trees forming large timber. In the convent of Santa Sabina at Rome, there is an orange tree 30 feet high, and said to be 600 years old. At Nice in 1739 was an orange tree 50 feet high, requiring two men to embrace it. The orange is a taller and more beautiful tree than either the citron or lemon. In Algarve and Andalusia, the orange trees are of great size.

"The present amount of oranges and lemons exported from St. Michael, is upward of 120,000 boxes, and 70 or 80 vessels are sometimes seen lying in the roads waiting to carry them to Europe. The imports into England from Portugal in lemons and oranges are 200,000 boxes. The principal exports from Seville are bitter and sweet oranges and lemons. The sweet oranges are more cultivated than the bitter. About 50 vessels of from 30 to 120 tons are annually loaded with oranges and lemons at Seville. The exports from Malaga are from 11,000 to 14,000 chests of

1,000 lemons each, yearly; oranges 300 to 500 chests. The imports into England, from all parts, have sometimes averaged 270,606 boxes a year.*

* For many years past, no small degree of attention has been paid to the culture of the common edible orange, at St. Augustine, and on the river St. John's. The number of trees owned by different individuals, prior to 1845, varied from ten to fifteen hundred. Perhaps no person in Florida had more than the latter number in full bearing condition, at the time of the great frost, which occurred on the 9th of February of that year. There were many trees then to be found in St. Augustine, which exceeded 30 feet in height, with trunks from 20 to 27 inches in diameter, and which, probably, were more than a century old. But there are many persons in that vicinity, at the present time, who are extensively engaged in the business. The late Mr. Kingsley left upward of 6,000 bearing trees, in 1843, all of which are on the St. John's. In addition to these, there are also on the same river, more than one hundred orange groves, which, it is estimated, contain 20,000 trees. At St. Augustine, it is said, there are, at least, 30,000 standard trees, 4,000 of which are owned by Mr. J. Douglass, about the same number by Mr. V. Sanchez; and by Mr. J. Drisdale, and the lady of the late Dr. Anderson, fifteen hundred each. Notwithstanding the injuries which the trees have suffered by the depredations of insects, for a few years, as well as by the discouragement caused by frost, it may be observed that there are more standard trees planted in Florida, at the present time, than there ever were at any former period. Previous to 1835, St. Augustine produced annually from 2,600,000 to 2,500,000 oranges, which were equal in bulk to about 15,000 barrels. They were shipped to Charleston, Baltimore, New-York, Boston, &c., and usually brought from \$1 to \$3 per hundred, or about \$3 per barrel, producing in the aggregate a little short of \$50,000 per annum. During the orange season, the port of St. Augustine formerly presented quite a commercial aspect, there being frequently from fifteen to twenty vessels in at a time, loading with fruit. A person who was the owner of 100 standard trees, could safely rely on a yearly income arising therefrom of \$2,000—sometimes \$3,000, and even \$4,000! In 1829, Mr. A. Alvarez gathered from a single tree, 6,500 oranges; and it is said that there was a tree on the St. John's, which bore 10,000 fruits in one year! But ordinarily each tree produces about 2,000 fruits. The orange has also been an object of culture for a long time in Carolina and Georgia; and in 1762, it will be seen by the London "Annual Register" for that year, that there were four barrels of this fruit shipped from Charleston to England.

(Browne—Trees of America.

It would be tedious to enumerate all the varieties of this tribe; besides, the learned differ as to which are species and which varieties. Who, then, shall decide? I give, however, from the large work of Risso of Nice, an arrangement which may suffice: Sweet orange 43; bitter and sour oranges 32; bergamots 5; limes 8; shaddocks 6; lemons 46; citrons 17 sorts. In India the shaddock, when it arrives at its largest size, is called Pamplemousse. There are in N. S. Wales some very good varieties of sweet orange raised from seed; the principal objection to them is their thick rind. A gentleman in Sydney has imported a number of varieties of choice oranges from China. Chief Justice Forbes imported a very superior orange called the Selitta orange; its fruit is much prized.

The fruit of the shaddock is from two and a half to eight inches in diameter. The juice is sweet in some varieties and acid in others; is rather insipid, but excellent for quenching thirst. The rind is very thick, in consequence of which the fruit can be kept much longer during sea voyages than that of any other species of citrus. In the West Indies the shaddock has been neglected; from having been usually raised from seed, harsh and sour sort of fruit of little value is obtained there. Thunberg says that it is commonly of the size of a child's head, in Japan. Dr. Sickler describes it as weighing fourteen pounds, with a diameter of from seven to eight inches. Bishop Heber thus describes the shaddock of India. The shaddock resembles a melon externally, but it is in fact a vast orange with a rind of two inches thick, the pulp much less juicy than a common orange, and with rather a bitter flavor, certainly a fruit which would be little valued in England, but which in this burning weather I thought rather pleasant and refreshing. In N. S. Wales the shaddock has produced fruit, but is very inferior in quality.

It appears that at Seville, orange trees in good years will yield from 1,000 to 1,500 oranges each. In St. Michael each tree, on arriving at full growth, will annually, upon an average, produce from 12,000 to 16,000 oranges! A gentleman told me he had once gathered 16,000.

In addition to the fruit as used in its fresh state, that of the different varieties, but especially of the citron, is used very extensively as a conserve. The expressed juice of the lime is exported in considerable quantities from the West Indies into England where it is used principally in the process of calico printing. The rind of the bergamot yields, both by pressure and distillation, the scent called bergamot. It is said to have its name from the town of Bergamo. Even the flowers are made to produce a revenue, as some gardens in France yield from £100 to £200 a year from this item alone.

The following observations apply to the cultivation, &c. of the orange tree; without

doubt they are most of them equally applicable to the other species. Where either of them requires a different treatment I shall of course, if I am aware of it, describe it.

MOISTURE.—If there be any instances in Western Australia in which the orange has thriven in what is commonly called dry soil, it has not come to my knowledge; should it be cultivable in such, I shall be agreeably disappointed. The only chance of success in such situations, I should say, is deep trenching in a soil either naturally or artificially rich. I do not mean that ground naturally dry may not be made available for this tree by irrigation, but I think that unless water can be had for it either naturally in the soil, or otherwise, success will be at least doubtful. Shepherd, who appears to have been a practical gardener, says that in N. S. Wales in a dry season hundreds of bearing orange trees die for want of water. Were they well watered and manured they would be seldom attacked by insects. I should like to see the orange tried in the black friable soil of our richest flats on the Swan—a good imitation of which would be old hot-bed dung, two or three years old, or compost of decayed vegetable matter. I would plant the trees in a depth of at least three feet of this compost.

As some persons who might wish to form orange groves no doubt possess situations suitable to the orange as to moisture, but with a soil totally unfit from its being too sandy, or otherwise too poor—I would say in such situations dig holes 4 feet deep and either 2 or 3 feet across, according to the abundance or otherwise of the compost with which they are to be filled. This space will suffice to nourish the trees and enable them to flourish and produce fruit for some years at least, as witness the orange trees in tubs or boxes which many of us have seen in England, Flanders, France and Italy. At a future time these trees can be supplied with additional pabulum without greatly disturbing their roots, by adding at their four sides, during four successive years, or at longer intervals, and to the depth of the original holes, a similar compost. The compost recommended by the French, and described below, or something like it, might be used for trees thus managed, on the same principle as that is, by them, for tubs, their intention is to compensate for quantity by richness. I would suggest that the holes on this plan be not shallower than four feet, as it would not be easy to increase the depth hereafter. The horizontal diameter across may be as little as two feet but not less, as the roots would completely extend over this space in one or two years. When they shall have been increased to four feet diameter they would equal in bulk the largest boxes I have ever heard of, and though not of sufficient bulk to produce trees of the very largest size, yet would carry a considerable quantity of fruit, and could be at any time hereafter increased indefinitely, limited only by the scarcity of rich soil or compost.

Though it is the opinion of gardeners that small sized boxes are best for this tree, I cannot conceive that a small tree—which it must be, comparatively, with its roots so confined—can produce 26,000 oranges. In very stiff soil, if holes be dug in this way, and any great quantity of water led over it, indeed with the rain of a wet winter upon it, it will be necessary to form drains from the *bottom* of each hole, which drains may be either hollow in the manner of underdraining, by means of stones or logs, or it may be sufficient to fill in the hollows of these drains with very loose, coarse sand, gravel, or other very permeable substance. In the neighborhood of Seville, the orange trees are irrigated every ten days, and the soil is disposed in small trenches to allow the water to spread. One plantation was there irrigated by means of a steam-engine, not, however, erected for the purpose. This may serve as a hint for those so favorably situated, to make use of any power at their command, whether wind, water, or steam, to raise water for this or a similar purpose. I dislike surface irrigation for two reasons—firstly, because where water is scarce there is necessarily a much greater evaporation, and consequently waste; secondly, because the soil, when moistened at and near the surface, will offer a greater inducement than the drier soil beneath to the roots of the tree to push into it, where they will, in this dry climate, be in greater danger of being injured by the sun, especially if, by any accident, the irrigation were suspended for any length of time. In which case not only may a crop of fruit be lost, but even the life of the tree, and thus the labor and hope of years at once blasted. I would say, if you irrigate—if you lead water in trenches through a soil naturally dry, let your trenches be at least one foot and from that to two feet deep. The writer has thus, by trenches about a foot deep, led water to thirty or forty orange trees planted on dry soil at sixteen and a half feet apart every way; the water having been obtained by digging horizontally into a sand-bank dry on the surface, and upward of fifty feet from the nearest row of trees. A trench runs along one side of each row at an uniform distance of three or four feet from it. This may turn out to be too near when the trees become larger and extend their roots. When this time arrives, these trenches may be advantageously filled up with rich soil or compost, and new ones dug in lieu of them one or two feet farther off.

SOIL.—The soil for the orange *must be rich*. Some writers—among others Loudon—insist on the necessity of clay being a component part of the soil, but though it thrives well in a clay, provided it be richly manured, I am of opinion, from all that I have read and seen of its cultivation, that it will do equally well in a rich soil into the composition of which clay does not enter. In the neighborhood of Genoa and Florence the soil is clayey, which is richly manured. Shepherd says,

"The soil best adapted for the orange is a fine, free, rich, black or yellow loam." In the south of Italy, and at the Cape of Good Hope, I have seen orange trees growing well in a rich, dark soil, and in the former of great size. At Naples, and in the Azores, in both of which places the soil is entirely of volcanic origin, the mountain slopes are planted with oranges and lemons. When we recollect that one of these islands, St. Michael, is the source whence chiefly England is supplied with this fruit, we may venture to pronounce that clay is not indispensable. The French gardeners recommend as a soil for the orange a compost made as follows: To a fresh loam, which contains one-third clay, one-third sand, and one-third vegetable matter, and which has lain a long time in a heap, add an equal bulk of half rotten cow dung. The following year turn it over twice. The succeeding year mix it with nearly half its bulk of decomposed horse dung. Turn it over twice or three times, and the winter before using add one-twelfth part of sheep's dung, one-twentieth part of pigeon's dung, and one-twentieth of dried ordure.

Henderson, a most successful cultivator of the citrus tribe, takes one part of light brown mould from a piece of ground that has not been cropped nor manured for many years, one part peat earth, two parts river sand, or pit sand if it be free from mineral substances, one part rotted hot-bed dung, and one part rotted leaves of trees, and mixes all well together, so as to form a compost of uniform quality.

MANURES.—Well prepared rotten leaves, two to three years old, one-half; rotten cow dung, two, three, and four years old, one-fourth; mellow loam one-fourth; with a small quantity of sand or grit. Garbage from the butcher's yard is recommended to be added to compost for these trees, but to be mixed twelve months before using. Shepherd says rotten dung should be applied to the soil in which the trees are to be planted.

From the practice, then, of different cultivators, we may say that the soil should be richly manured, but I would say on no account apply crude or unrotted dung.

TEMPERATURE AND SHELTER.—Loudon says: "The standard temperature for the citrus tribe is 48 degrees; but in the growing season they require at least 10 degrees of additional heat to force them to produce luxuriant shoots. The air should never be allowed to fall under forty degrees, though the orange will endure a severe degree of cold for a few hours without injury." Humboldt observes: "The orange requires an average temperature of 64 degrees." I do not understand what Loudon means by stating 48 degrees as the *standard temperature*: I think he cannot mean the average. It requires a situation well sheltered from every cold wind, as a violent storm will sometimes lay the whole crop on the ground in a night, and in New South Wales it succeeds very well with-

in twenty or thirty miles of the coast, but cannot be cultivated at Bithurst or Argyle, on account of the severe cold. The orange plantations of St. Michael are always encircled by a wall of from 15 to 20 feet high, and within, a thick plantation belt of trees to protect the orange trees from the sea breezes. Even within these sheltered groves, the young plants, when first set out, are surrounded by plantations of laurel, broom, &c., until the tender orange trees are sufficiently strong, at which period the plantations immediately round them are removed, and each plant begins to shoot up. In England, even, this tree is enabled to bear the climate by a little protection; for at Saltcombe, Devon, there are in a few gardens orange trees which have withstood the winter in the open air for upward of 100 years; the fruit is as large and fine as any from Portugal; but I believe these are trained against walls. They are sheltered with mats of straw during winter. The climate of Portugal is rather too cold for the orange; they suffer much in the severer winters, and only do well on the low grounds and more sheltered situations. The tops of the trees are often injured by the cold winds in common winters, especially when they grow at all lofty. They bear the open air at Nice, Genoa, and Naples. But at Florence and Milan, and often at Rome, they require the temporary protection of a shed. With this knowledge, then, we cannot doubt that they will succeed in the present settled districts of Western Australia which lie between the darling range and the sea. It will be desirable, however, in the colder localities even within these limits, to raise plants *from seed, on the spot*, as these are found to bear the cold better than trees imported. As to our hill districts, I think it doubtful whether the orange will succeed in open compartments, on account of the lower temperature of the winter nights so far in the interior, produced by the greater elevation above the sea. It should be tried, however; and with shelter, as that of an awning of canvas, or temporary thatched roof during the colder months, it would no doubt do well. Probably the most effectual plan for protecting the trees from the cold would be to plant them on the western side of a wall. A row might be planted the whole length of the wall, and at the distance of about 3 feet from it, and the same distance apart in the row. Where the space will allow, a second row might be laid out 3 feet from the first. These latter will be almost as well protected as the first, and indeed quite so, if it happen that the ground slope much to the west; the object being to shade them from the morning sun, and to allow the temperature of the surrounding air to become somewhat warm before the direct rays of the sun fall on the trees—it having been found that the orange will bear a very great degree of cold if continued only for a short time; but sudden heat applied to the cold plants greatly injures them. Dr. Seckler says, "It is re-

markable how much cold and snow the common oranges and lemons will bear at Rome, provided they are planted in a sheltered situation, not much exposed to the sun. Thus I saw in the two winters of 1805 and 1806, under my windows at Monte Pincio, three standard orange trees in the open ground heavily covered with snow for more than a week. The green leaves, but still more the golden fruits, nearly ripe, looked singular, but beautiful, amid the snow; neither fruits nor trees had suffered, being in a sheltered place, while many branches and leaves of other trees of this kind, which were exposed to the sun, turned black and died, rendering the whole tree sickly." As Knight has remarked, "It is more the sudden transition from cold to heat and the contrary, than the degree of either, which destroys vegetables." Another row of trees should be planted along the wall itself, say 6 inches from it, with the view of being trained to it as directed below, under the head of training. These trained trees sometimes produce large crops of fruit. It will sometimes happen that settlers, when laying out their homesteads, can so arrange their buildings that the western wall of either the dwelling or some of the offices may form the eastern fence of a garden or court, with a view to making it a protection for an orange grove. The projecting eaves will not injure the tree, as the orange will bear to be shaded; if, however, the rain be kept off by the eaves, the trees should have water dashed over them once or twice a week during summer, when not in flower. I believe the orange is the most hardy of the tribe; probably this only would succeed in the interior.*

* The orange is found to flourish best in a warm, fertile soil, composed of sand and loam, or sand and clay, not too dry, and sheltered from chilly and parching winds. But it is cultivated in varied soils, and will thrive in any country, with a mean annual temperature of 62° to 84° F. Hence the locality favorable to the growth of this species depends fully as much upon soil and situation as upon latitude; and we are induced to infer that if the temperature be sufficiently high for maturing the flavor, the fruit is delicious in proportion to the uniform salubrity of the air; and that those high temperatures which often force a very large expansion of fruit are against the fineness of its quality. For instance, we will contrast the fruit of St. Michael's in the Azores, of Bahia in Brazil, or of some of the West India Islands, with that of Malta. The former is always exposed to the equalizing breezes wafted across the Atlantic, while that of the latter, lying near the arid and sultry coast of Africa, is subject to more changes of season and a greater and higher range of temperature. There is also some difference in the soil of these places. The artificial earth, which forms the soil of Malta, was originally brought from Sicily; and by the decomposition of the rock, or of the saline particles brought by the same "pestil at sirocco" that blasts the fruit of the south of Italy and Sicily, a crust is formed, which, if not removed by trenching, at the end of a certain number of years ceases to be productive, or the oranges become so bitter that they are neither palatable nor healthful. But St. Michael's, Bahia, and the other places referred to, have no such disadvantage; the soils in those places are native, and deposit nothing calculated to injure their fertility or impair the qualities of their fruit. The same fact may be corroborated in comparing the climate of the slopes and valleys of the Estrella, near

DISTANCES.—The distances at which orange trees are planted vary considerably. In a thriving grove I have seen them growing about 16 feet apart. It appears that in the neighborhood of Seville they are planted at the distance of 21 or 22 feet. We are informed that orange trees do best when planted rather wide asunder; lemons are better for being crowded together. This observation, however, is rather vague. For oranges against walls or trellises, plant about ten or twelve feet distance, allowing a larger space for the citron, lemon, and shaddock. I would say, then, having no information as to the distances of others of the species in open compartments, that any of them may be placed at 16½ feet apart each way, which will take 160 trees to the acre. This would give plenty of room for any of the sorts for a number of years, and if found too crowded, the superabundant trees—say the alternate rows—might be cut out. The distance for planting them appears to vary from 6 to 22 feet, according to circumstances. So long as plants may be obtainable at the low rate at which they now

may, I should say that it could not be wrong to set them at the shorter of these distances one way at least, say 6 by 6, or 6 by 12; when found too crowded, each alternate plant or row might be taken out. I would, however, do this, only where the natural soil is suitable to the plant, or at least with the addition of manure, and with low-priced trees. Where much expense is required, as in digging deep holes, and bringing soil or compost from a distance; or in case of expensive worked plants, I would take 16 or 16½ feet as the distance. Under walls, also, or where the situation proper for them is very confined, I would adopt the plan of short distances for obvious reasons. The quincunx manner, the plants in one row being opposite the spaces in the next, seems preferable for plants at short distances at least.

BEARING AGE.—In Europe the orange begins to bear fruit when about 6 or 8 years old. I am not aware of the age at which others of the species begin to produce. In Western Australia lemons have fruited in several gardens, and I am informed they are looking most promising this season. Probably the lemon, when not worked, is the more precocious of the two. The writer has had, during the seasons of 1842 and 1843, in his garden on the Swan, no less than five orange trees in flower or fruit. He believes these are the only oranges which have yet fruited in the Colony, though others have trees very much older and larger. This is attributable entirely to their *having been worked*. Two of these trees flowered *within two years from the bud!* the stocks not being an inch in diameter. Nothing can show more clearly the great effect of working trees—a circumstance far too little attended to in this country with all fruit trees. He has also had a lime under two feet high in flower, and has a citron now bending down with magnificent fruit.

the lower Tagus, and that of the maritime Alps, and the Apennines, in Provence and Liguria, with that of Andalusia. At St. Augustine, in Florida, the fruit is generally of a superior quality, owing to some peculiar influence of the soil and climate. The mean annual temperature of that place in 1842 was 73° F., and in 1843, 72°. The extreme heats from June to September are usually as high as 92°; but they have been known to reach 97°. The extremes of cold generally range from 38 to 40°; but sometimes the mercury has fallen as low as 30°. On the 9th of February, 1835, the time that nearly all the orange trees of Florida were cut off by frost, it is said that the thermometer indicated a temperature of 10 to 15°. In February, 1823, as well as in the same month in 1839, the trees also suffered in their extreme branches, from the effect of frost. On the morning of the 9th of January, 1765, the thermometer stood at 26° at St. Augustine, and the ground was frozen to the depth of an inch, on the banks of the St. John's. This extreme cold proved fatal to the orange and many other trees.

[Brouce—*Trees of America*.]

We must here stop short with our extracts. The subject will be concluded in the next number, in which it will be treated under the heads of PROPAGATION, BUDDING, GRAFTING, SEED AND SEEDLINGS, LAYERS, CUTTINGS, TRAINING AND PRUNING, INSECTS; together with a list of the varieties of the sweet orange, under the head DESIDERATA—concluding with a note on the subject of Insects which have proved so destructive to orange orchards in Florida. True, we have not as many readers as we could wish, in a region to which we plead guilty to the charge of partiality; but that is no reason why we should not have more: at all events, those we have there, are “*some*,” in quality at least!

RENOVATION OF PEACH TREES.—The peach tree, in this climate, is liable to several diseases. When it is observed to sicken, no time should be lost in carefully removing the soil from the roots, and supplying its place with charcoal. A friend informs us that during the past season a very healthy tree in his garden suddenly sickened and began to cast its foliage. He adopted the measure above prescribed, and was surprised at the suddenness of its renovation.

THE COMMERCIAL REVIEW.

THE first number of this work that we are aware of having seen, reached us on S—day, and we can only say, judging by that, we lament not having seen all—except the one in which our able and worthy brother says he “quarreled” with us about the *Patent-Office Report*. Where ignorance shields us from pain, would it not be “folly to be wise?” We will begin as soon as we can, to give the very interesting paper on the Culture and Management of Sugar: having ourselves failed to get, from friends to whom we applied, an essay on the same subject. We need hardly say that we were charmed with this Review, when we add, that we read it through “at a heat,” as the smith would say. If the Editor, however, thinks the Patent-Office Report a becoming *National General Government exposition of the industrial resources and progress of this country*, why, all we have to say is, that his judgment makes us distrust our own; and we would make any sacrifice to agree, and yet more not to “quarrel” with him. Still, in respect of a thing that looks, in our eyes, so much like “smoke” we can’t quite agree to say it looks “very like a whale.” Will the Editor, nevertheless, say to his friends at Baton Rouge whether he thinks it would, or would not, be expedient for them to distribute THE FARMERS’ LIBRARY, in bound volumes, as *premiums*, in lieu of the same amount *in lucre*? One thing in the Commercial Review which bears a peculiar charm in our eyes, is the liberal and generous manner in which it speaks of a kindred, if not a parent work, our friend and neighbor HUNT’s most excellent and most popular periodical. Let us all, then, like fathers, sons and brothers, rival one another in seeing who shall do each other the most kind offices; or, if we do “quarrel,” let it be like Ovid’s “Lovers’ Quarrels,” the *renewal of love*! Such, thank God! is the editorial spirit that for thirty years has animated *this deponent*!

SOUTHERN AGRICULTURAL ALMANAC

THE AMERICAN AGRICULTURIST.

If we had Uncle Sam’s long purse and long scissors, and did not think it would be unworthy of us, we should not desire a more valuable journal than we could slice, every month, out of the American Farmer, the Farmer’s Cabinet, the American Agriculturist, The Cultivator, the Southern Planter and Southern Cultivator, and other journals. The last two, for some reason, we have not received for months. We cannot particularize the many things in them all, which we should like to copy; among them Mr. AFFLECK’s dissertation, in the American Agriculturist, on the cotton caterpillar.

Mr. A. is in the heart of the great cotton region, with the requisite knowledge and spirit to enlighten his brother planters in all branches of husbandry adapted to their region and climate; and it is matter of congratulation for them that he has engaged to do it through the popular medium of an *Almanac*, under the title of “Norman’s Southern Agricultural Almanac,” of which the first of the series, the one for 1847, is already published.

From the (London) Farmer's Magazine.

SUPERPHOSPHATE OF LIME.

USE OF SUPERPHOSPHATE OF LIME, PRODUCED WITH ACID AND BONES FOR MANURE.

BY W. C. SPOONER.

[Prize Essay of the Royal Agricultural Society.]

THE difficulties under which the pursuit of Agriculture has for some years labored—the importance, and, indeed, the absolute necessity of raising the largest crops of roots at the least possible expense, afford ample reasons for the Council of the Royal Agricultural Society of England proposing as a subject suitable for a prize essay, “The Use of Bones with Acid,” which on high authority has been designated “the most important saving which was ever held out in the use of manure.” If any additional reason were required why the utmost attention should be devoted to this important matter, and the most extended information gained respecting it, it may be found in the fact that while the constantly increasing population of this country demands a corresponding augmentation of animal and vegetable food, the sources of supply both of bones and guano are likely to become greatly diminished. Thus, not only as it affects the interest of the occupier and owner of the soil, but also on national grounds, is the subject of our essay worthy of the deepest consideration. The superior economy of employing bones mixed with an acid, over that of using bones alone, is no longer a hypothetical or even a probable statement, but an established fact; and though I shall have to offer some results in corroboration, yet I do not hold them as essential to the subject, so fully has the success of the mixture been established from the numerous experiments related in the Journal of the Royal Agricultural Society, and more particularly in the excellent and elaborate essays of Mr. Hanham. And though I shall find it necessary to pass rapidly over all the various branches of the subject, yet my claims for honorary notice will principally rest on affording such practical information on points hitherto but briefly attended to, as may, I hope, render this essay of really practical and pecuniary value to agriculturists in general.

The specific effect of bone as food for the turnip crop has long been known—long, indeed, before science was in a position to explain the cause of its peculiar effects, or to assign correctly to what portion of its constituents the benefits are chiefly due.

It was found, greatly to the surprise of many, that burnt bones, in which of course the organic parts had been destroyed, were equal, if not superior, in their effect to bones

not so treated: and that when boiled, in which state the fat had been expelled, they were more productive than bones in a fresh state. It was thence supposed by those who jumped to conclusions too hastily, that the substances thus expelled were useless at any rate for the turnip crop, and they were apparently supported by the theory of a very eminent chemist, who, if we mistake not, laid it down as his opinion that the value of manures depended principally, if not entirely, on their inorganic ingredients—a doctrine altogether at variance with the previous generally received notions, that ammonia was the true fertilizing element, and that its amount afforded the measure of the value of manure. *In medio tutissimus ibis*—the truth, we take it, will be found to lie between the two extremes. We may justly regard the inorganic constituents as being the most important and essential portion of manure, affording to the plant what the skeleton does to the animal, the basis of support; and, as plants can obtain no other supply but through the soil, we may justly regard them as the most essential constituents.

The other elements are, to a great extent, supplied through the atmosphere, and even nitrogen and its combinations may thus be furnished. The avenues through which this atmospheric supply is furnished are the leaves of the plant, and their size affords a correct criterion, *ceteris paribus*, of the amount of nutriment derived from the aerial source. Thus beans and other pulse obtain more food from the atmosphere than cereal plants; roots more than the former; and wheat, from the small size of the leaves, less than any. Thus only can we account for the striking fact that if we give a good supply of inorganic elements *only* to the turnip crop, we shall very probably have a plentiful crop, while if these be absent, however rich the manure may otherwise be, the crop will be a failure. Not that we must therefore draw the conclusion that the organic manures are of little or no importance to root crops: they are of value, and particularly to the grain crops which succeed.

The organic matter which composes about one-third the substance of bones is, however, so intimately combined with the earthy portion, and their disunion is accomplished with such difficulty, that the good effects of either

are to a certain extent neutralized, at least so far as the first crop is considered; and we are consequently obliged to supply five or six times as much as the crop actually requires, and to render them available by means of pulverization. It is on this principle that the assistance of sulphuric acid is sought for and obtained: it serves by its chemical affinities to separate the component parts of the bones, and render them more soluble and available as food for plants. In the excellent and accurate experiments of Mr. Hannam, related in a former number of the *Journal*, it was clearly proved that fresh bones when ground were superior to boiled ones, from which the fat was extracted; and the latter were superior to burnt bones, from which the gelatine was also removed. This result was, however, far more striking when the bones were dissolved in sulphuric acid, a difference of nearly two tons of turnips being observed, while with the bones merely ground a difference of 17 cwt. only was exhibited. From the same experiment we likewise learn that the beneficial effects derived from the earthy part of bones are $4\frac{1}{2}$ times greater than that derived from the organic parts. I refer to the *Journal* for the particulars of these experiments, and to the previous number for other statements, from which, if we had no other evidence, we should be justified in drawing the conclusion that 20s. laid out in bones and acid will go much farther than 40s. expended in bones alone, so far as the turnip crop is concerned.*

These experiments, however, appear to have been made with the addition of a very considerable quantity of water, so as to apply the manure to the land in a liquid state, which, without denying its superiority, is yet attended with such difficulty, trouble, and inconvenience, that it is vain to expect that farmers generally would incur it. The expense of a proper cart for the application of this manure in a liquid state is very considerable, and sufficient to prevent its general adoption. And, although it was in this form that the public were first made acquainted with its valuable properties, yet its general adoption must be attributed to the additional discovery that it can readily be applied in the state of compost by means of the common drill. Having directed my attention to the preparation and employment of this valuable manure in the form of compost, I am in a position to state that by its means one-half the usual expense in the purchase of bones may be saved.

We cannot, however, do better than take as our text, or rather the heads of our subject, the points to which the attention of competitors are drawn by the Council of the

Royal Agricultural Society of England, which are—

1. State of Bones.
2. Proportion of acid in a given weight of bones.
3. Proportion of water, if any, mixed with the acid.
4. Mode of mixing the bones with the acid and of preparing the compost.

5. Effect of various quantities applied in combination or comparison with common bones and other known manures.

1. First, then, the state of the bones—with regard to which I have merely to observe that they should be as fine as possible, but the ordinary state of bone-dust will answer the purpose very well. The dust is decidedly preferable to half-inch bones, for, while the increased weight of the former will compensate for its greater price, the points of contact being greatly increased by subdivision, the bones are more rapidly and more perfectly acted on by the acid, and require, in fact, a less quantity both of that and of water.

We next come to the second and more important point.

2. The proportion of sulphuric or muriatic acid to a given weight of bones.

Sulphuric acid is preferable to muriatic acid for several reasons: it is stronger, cheaper, has greater specific gravity, and contains much less water. On mixing it with water, a much higher temperature is attained, which conduces to the dissolving process, particularly of the organic portion of the bones. In addition to these reasons, we find that in the trials which have been made, muriatic acid has been found somewhat inferior. I have, however, been rather surprised that there should not have been a more decided difference than proved to be the case in Mr. Hannam's experiments; and we can only account for this by bearing in mind that the lowest proportion of muriatic acid employed was one-half, which was perhaps sufficient to affect all the phosphate of lime contained in the bones, whereas, if one-third had been employed, as was tried with the sulphuric acid, the result might not have been so favorable for the muriatic acid. Besides this, probably the muriate of lime formed by the muriatic acid is more fertilizing and soluble than sulphate of lime formed by the sulphuric acid; and, from its great attraction for moisture, particularly advantageous in such a dry season as that of 1844. It is, therefore, by no means improbable that an equal quantity of bones prepared separately with the two acids, and afterward mixed together, might be more productive than bones prepared with either acid alone.

The proportion of sulphuric acid most desirable to employ is a very important point, inasmuch as it has been shown that sulphuric acid alone, or mixed with water, possesses very little fertilizing powers. This, probably, is owing to the circumstance of the soil generally containing a sufficiency of this element,

* May we not expect something like the same result when applied to other plants of large leaves—as Indian corn, and tobacco, and clover? We should be glad to attract to this subject the attention of friend Hollowel, or Mr. Teschemacher. [*Ed. F. Lib.*]

and to the fact that phosphoric acid is so extremely essential, particularly in the early stages of the growth of the plant, that it will not prosper without it, whatever we may otherwise employ as manure. A neighboring agriculturist during the last year tried to raise a crop of turnips with a good dressing of salt and soot, which contain no phosphoric acid, though plenty of ammonia and other fertilizing ingredients, but the result was a total failure. In a garden experiment, I may here observe, I found sulphuric acid and water succeed as well as bones in raising turnips, but the soil no doubt contained phosphoric acid, as well as alkalies, on which the acid could act favorably.

Before we authoritatively pronounce on the quantity of acid necessary to be mixed with the bones, it will be better to inquire into the nature and properties of the substances we propose mixing together.

Sulphuric acid, or oil of vitriol, as it is more frequently termed, consists of the union of two parts by weight of sulphur with three of oxygen gas, and its strength depends on its purity and freedom from water, for which it has a remarkable affinity, so much so that if exposed to the air it will quickly absorb water from the atmosphere. Its relative weakness, therefore, is owing to the quantity of water mixed with it. In speaking of sulphuric acid, I must be understood to mean in its concentrated state, possessing a specific gravity of from 1.8-1.5 to 1.8-50. And it should be borne in mind, in purchasing the acid, that 50 lbs. of the above is at least equal to 60 lbs. of the specific gravity of 1.7-1.4, and therefore if the weaker acid is used, its quantity must be increased in proportion to the diminution of its strength.

On applying the vitriolized bone to the tongue, we find that it tastes both sour and sweet. The sourness arises probably from the phosphoric acid, and the sweetness from the gelatine sugar, which is formed by the action of the acid on the gelatine, converting a substance very difficult of decomposition into one readily soluble, and which can be easily absorbed by plants. When concentrated acid is mixed with a quarter of its weight of water, the temperature of the mixture is raised to 300°, and boils away at a great rate. The action of this heat on the animal part of the bones renders it of a dark color; but if a small quantity of acid only be employed, the mixture is white, from the carbonate of lime which then predominates. From an average taken from several analyses of bones of man and various animals, the following appears to be tolerably near the mean:

| | |
|--|-----|
| Organic matter, consisting of gelatine, cartilage, and fat | 34 |
| Phosphates of lime and magnesia | 59 |
| Carbonate of lime | 7 |
| Total | 100 |

Or, in rough numbers, the organic matter may be regarded as forming one-third and

the earthy portions two-thirds. Of course, if the bones are very fresh, the former will be in larger proportion than one-third; thus Mr. Hanman gives it as 15 per cent. The above, however, may be considered as a fair average in the state usually employed by farmers.

Four bushels of bones, which may be considered to be a fair allowance for an acre, will weigh, in a fine state of bone-dust, about 180 lbs.* This quantity contains 124 lbs. of carbonate of lime, consisting of carbonic acid 5½ parts, and lime 7 parts, which will require 10 lbs. of sulphuric acid to convert it into sulphate of lime or gypsum. This is the first result of the mixture, and is the cause of the very unpleasant fumes which are given off, and which consist in fact principally of carbonic acid disengaged from the carbonate of lime in consequence of the superior affinity which lime has for sulphuric acid. This result takes place before the acid acts on the phosphates of the bones, and thus it is that when a small quantity of acid has been sprinkled over bone-dust, the good effect has been but moderate, the carbonate of lime alone has been acted on, and the phosphate of lime has remained undecomposed.

The quantity of phosphate of lime existing in the 4 bushels of bones is about 106 lbs., containing 47 lbs. of lime and 59 lbs. of phosphoric acid. If we consider superphosphate of lime to contain a double portion of acid—a fact, however, not quite decided—then 33 lbs. of sulphuric acid will be required, which by uniting with half the lime, or 23½ lbs., forms gypsum, and leaves the other moiety of lime united with a double portion of phosphoric acid in the state of a superphosphate. Thus, 43 lbs. of acid will be required to effect these changes, leaving any additional quantity for other purposes.†

Phosphate of lime is a substance very difficult of solution, and thus in a very dry season the effects of bones are often very slight and imperfect. Superphosphate of lime, on the other hand, is extremely soluble, so much so that the vitriolized bones can be entirely dissolved or suspended in water, and thus applied. This at once explains the cause of the valuable properties of the preparation. The bones in their natural state are extremely indigestible: the acid cooks them—converts them into a species of soup which can readily be eaten and digested by the young turnips. The adamantine fetters with which the various elements composing bones are bound so compactly together, are, by means of this new agent burst asunder—the compact is broken, and each constituent element is left to pursue its own course and to exercise its

* I find that the average weight of bone-dust, as it comes from the mill, is 168 lbs. per 4 bushels, although I have found it reach the weight stated in the text. (Lat.

† I do not mean to say that these are the precise changes which take place, but only an approximation to them. Probably some portion of phosphoric acid may be left in a free state in the prepared mixture.

own natural affinities. The chemical changes which take place between the sulphuric acid and the organic portion of the bones are, no doubt, very complicated. Sugar is one result, and probably sulphate of ammonia is another; but I cannot venture to state what quantity of sulphuric acid may be necessary to effect these changes. If we presume that one-third is the proportion of sulphuric acid employed, then there will remain 17 lbs. to act on the organic portion of the 4 bushels of bones—the remainder having been required by the earthy portion.

We find that manufacturing chemists, in the preparation of phosphorus from bones (now largely required for lucifer matches), first destroy the organic part of the bones by means of fire, and then mix the remainder with half its weight of sulphuric acid. Thus, if we suppose 180 lbs. to be the quantity employed, by burning it will be reduced to 120 lbs., requiring 60 lbs. of acid to form superphosphate, which would be one-third the weight of the bones previous to burning. I suppose, however, that in this case an excess of acid is required to render the process complete, as one-half would otherwise appear to be more than the quantity demanded.

From these and other reasons we may justly consider that the proportion of acid to the bones should never be less than one-third nor more than one-half. The former, I think, is the most economical, but probably the precise quantity most desirable will be 42 per cent. of acid. I may, however, observe that in an experiment during the last season, in which one portion of the land was manured with bones and acid in different proportions, that which had more bones and less acid proved to be a somewhat better crop than where fewer bones and more acid were used; the expense being the same in both instances.

3. The proportion of water to be mixed with the acid will next receive our attention.

When one part by weight of water is mixed with four of acid, the temperature is raised to 300° Fahr. It is, therefore, very desirable that sufficient water should be used to produce this great heat, which facilitates the dissolving process; and the quantity above stated, or, if more convenient, the same measure of water as of acid, which will be rather more than half the weight, will be a very good proportion. More should not be used, as no useful purpose will be accomplished. In an experiment tried last year with different proportions of water, I could not detect any difference in the result. The water should be applied first by means of a watering-pot, so that it may be intimately combined with every portion of the bones. This is an important point, and greatly facilitates the dissolving process, which without it is very likely to be imperfectly accomplished.

Another reason for applying the water first is, that the bones becoming partially saturated, the acid, from its great affinity for it, rushes as it were into the pores of the bones in search

of the water, and thus the bones become more rapidly and perfectly mixed with and acted on by the acid. When no water is employed, and the bones are not entirely in the state of fine dust, as they never are unless purposely sifted, the surfaces of the small pieces of bone become acted on by the acid, and a coat forms around them which seals up the interstices of the bones, and prevents the acid from penetrating. I have no doubt this is often the case likewise from careless or imperfect mixture, and the good effects of the manure are thus materially diminished.

4. Mode of mixing the bones with the acid, and of preparing the compost.

It has been recommended that a large heap of ashes or mould should be made with a hole or depression on the top, in which the bones are to be placed, the acid poured over them, and after some time the whole shoveled up and mixed together. Now, if we examine into the effects of this mode of procedure, we shall readily perceive the objection to which it is subject. The ashes, no doubt, contain a considerable portion of carbonate of lime, besides other salts, for which sulphuric acid has a very strong affinity. Thus the bones are robbed of a large proportion of the acid, of which they ought to have exclusive possession. And even if common mould is used, or any other substance which has no particular chemical affinity for the acid, still this mould will mechanically absorb much of the acid, and thus deprive the bones of it.* I hold it, therefore, as a point of much importance that the whole of the acid should be directly applied to the bones, and that no other substance should be allowed to intercept or abstract their mutual affinities.

A very convenient and cheap vessel for manufacturing the mixture is a sugar hog-head, having its hole stopped with plaster of Paris. It is very desirable to avoid if possible any measuring or weighing of the acid, as it is so very dangerous a substance to handle. Many serious accidents occurred to my knowledge during the last year, and it is very difficult to impress farm servants with a sufficient degree of caution, or even to convince them that a liquid which appears so colorless will burn their skin and clothes. In emptying a carboy of acid even into a tub it is difficult to prevent a little slopping about and damaging the clothes of the attendants, as well as the basket, &c., which contains the carboy. To prevent these unpleasant consequences I have adopted the following plan: The carboy is placed on a stage or cask the same height as the sugar hog-head, into which is put the precise quantity of bone-dust we intend mixing with the carboy of acid. The water is now added with a watering-pot hav-

* I have not found that any considerable quantity of the acid passes through the bones into the heap of ashes or earth; and though Mr. Spooner's is the better plan, where his apparatus can be easily procured, I still think that the expedient I mentioned may be found sometimes convenient. [*Ph. Pusy*]

ing a rose at the end, so as to disperse it thoroughly, and the carboy of acid is then emptied by means of a siphon. This siphon is formed of a piece of block-tin pipe, which can be bent into any form, about $\frac{3}{4}$ of an inch in caliber, and 4 feet in length. A brass cock is soldered to the long end of the siphon, on which the rose of a watering-pot may be placed. The siphon is now filled with water, and its long end closed with the cock, and the small end with the hand or finger. The latter is then quickly inserted into the mouth of the carboy, the cock turned on, and the acid will continue to flow till the vessel is nearly empty, without any assistance, so that the attendant has no occasion to expose himself to the injuries and offensive fumes which almost immediately begin to escape. He may, however, approach the windward side of the tub, and give the mixture a little stirring, which should be continued for some little time afterward, so that the mixture may be complete. A convenient utensil for this purpose is a fork with two grains, long in the grain, bent at some distance from the grains nearly at right angles, and fixed in a wooden handle. On the same day a fresh lot of bones may be added, and the process repeated until the hogshed is nearly full. In two days afterward the mixture may be shoveled into a heap, and either remain till wanted or mixed at once with a certain portion of ashes. It should be shoveled over several times and ashes added at each time of turning, which will thus render the mixture fine and dry enough to pass through an ordinary drill.

It must be evident that much of the value and economy of the manure depends on its being perfectly mixed, so that every particle of bone should be exposed to the action of the acid. In many cases I have no doubt this has not been sufficiently attended to, and the result has been either that more acid has been used than is really required, or that much of the advantageous effects has been lost.

By the method which I have here recommended, and which I have adopted after many trials, the mixture can be readily and accurately manufactured, and with perfect safety to the attendants.*

5. Effect of various quantities applied in combination or comparison with common bones and other known manures.

My own experience of the advantages of sulphated bones commenced in the very dry summer of 1844. Wishing to try their effects, and thinking that it was highly desirable to apply them as a compost by means of the drill (though I had not heard of any instances in which they had been so used), I resolved to make the attempt. I intended to apply

* In manufacturing a considerable quantity of the mixture to meet a large demand for the present season (1846), I have found much advantage from constructing various utensils of different shapes, so as to perfect the mixture without inconvenience to the attendants, as well as from other improvements in the manipulative process.

[*Ant.*

the bones at the rate of $3\frac{1}{2}$ bushels per acre, and half their weight of acid; but from not making sufficient allowance for the dampness of the manure, it extended over a large portion of land, so that little more than 2 bushels per acre were used with about 16 bushels of ashes. On the same day (in the early part of July) other portions of the field were drilled with bone-dust at the rate of 16 bushels per acre, and some parts with South American guano. The bones and acid Swedes were the first to appear, and their tops grew most luxuriantly. The turnips suffered from not being hoed till they were too forward, but the crop throughout the field (considering the late period of their being drilled, and other unfavorable circumstances) was a very fair one, about 14 tons to the acre. The bones and acid portion was fully equal to the rest, and indeed somewhat better than where 16 bushels of bones had been applied to the acre.

Every alternate ridge was carted off, and the remaining half fed off by old ewes with no other food, with the exception of a little inferior hay. The field was then sown with dredge (a mixture of beans, barley and peas), and the crop was a very excellent one; that where the vitriolized bones had been used was at the least fully equal to any portion of the field, and indeed somewhat superior to that dressed with bones alone. Thus it will be seen that the manure answers perfectly well so far as the second crop is concerned; and there is now the prospect of a good clover crop.

The result of the preceding year having fully satisfied me as to the value and economy of vitriolized bones, I did not think it necessary to test their merits against other manures during the last season, particularly as other equally successful experiments had been tried and published.

But, wishing to ascertain the most economical proportion of acid to be employed, I prepared two lots for a field of 6 acres. In one the bone-dust was at the rate of 4 bushels to the acre, and the acid one-third; and in the other the acid was half the weight of the bones, but the latter was diminished so as to reduce the cost of both lots to the same sum. The mixture in each instance extended over half an acre more than was intended, and was mixed with equal portions of ashes, viz. about 20 bushels to the acre.

The Swedes came up well, and, though attacked by the fly, soon got out of its way, and proved a very good crop. The average of the field, however, was very much reduced by the great quantity of hedge-row timber by which it was surrounded, and which spread its blighting influence a considerable distance. However much these trees might add to the beauty of the landscape, they certainly destroyed most effectually the beauty and uniformity of the turnip crop, and reduced the average of the field several tons per acre. A good portion of the field appeared to average

about 22 tons per acre, and the half where the larger quantity of bone-dust with one-third its weight of acid was used, proved superior to the other, though whether to be attributed to the difference in the manure, or to the fact of that part of the field being somewhat drier, it is difficult to say.

The field was a clay loam on the London clay, and was partially drained.

I also supplied various agriculturists in my neighborhood with vitriolized bones, prepared in the proportion of 4 bushels (130 lbs.) of bone-dust, and 60 lbs. of concentrated sulphuric acid, which I recommended to be applied to an acre when no other manure was employed. The result in nearly every instance has been decidedly favorable.

Mr. W. Gater, of Westend, employed it at the rate of 2 bushels of bones to the acre, in addition to a fair dressing of farm-yard dung. On a portion of the field the dung was used alone. The former was fit for the hoe several days before the latter; and on weighing portions of each, in January last, there was a superiority of 5 tons to the acre in favor of that portion which had received the addition of sulphated bones.

Mr. J. W. Clark, of Tinsbury, used the manure which I supplied him with in the same proportions also, in addition to farm-yard dung, and the Swedes proved the best on his farm. The amount of vitriolized bones used per acre varied in different parts of the field, and the goodness of the crop precisely corresponded to the quantity applied.

Mr. J. Blundell, of Bursledon, also used it at the rate of 4 bushels of bones to the acre, with 6 bushels of ashes in competition with night-soil and ashes. On visiting his farm a few weeks afterward, I noticed, at several fields' distance, the superiority of one portion of the field, which I found was that on which the vitriolized bones had been used. The dampness of the season, however, proved so favorable to the development of the other manure that, on weighing them in December, the latter was found about half a ton per acre heavier; the expense, however, was nearly double. The weight of the crop was between 17 and 18 tons per acre. I have no doubt that if Mr. B. had applied 20 bushels of ashes to the acre, instead of 6, with the sulphated bones, the result would have been much more favorable. When we bear in mind the large amount of potash contained in the crop, it must be very evident that it is of importance to supply a good quantity of ashes which contain a fair proportion of potash; I would therefore recommend that 20 bushels of ashes per acre, at least, should always be employed.

Mr. Pocock, of Hickley, used the manure at the rate of 4 bushels per acre, and one-third acid, and was well pleased with the result, though he did not ascertain its amount.

Mr. Withers, of Luzborough, was another farmer to whom I furnished a quantity, prepared as before mentioned, and he reports very favorably of the results.

Mr. Fielder, of Sparsholt, was induced by my representation of its favorable effects to try the manure, and he found that on his light land on the chalk it answered admirably.—Two bushels of vitriolized bones with ashes successfully rivaled a small portion of ground drilled at the rate of 60 bushels of bones to the acre for the purpose of experiment.

Although the vitriolized bone has proved very successful with white turnips, I believe that its peculiar excellences are most fully proved by Swedes. I wished to ascertain this by experiment, and accordingly on the same day and on similar land, a clay loam, 3 acres were drilled with Laing Swedes, and 3 acres with Matson's white globes after tares. The Swedes proved decidedly superior both in the early and later stages; and though the roots, as might have been anticipated, were but of moderate size, in consequence of the very late time of drilling (early in August), yet on comparing a few rods without manure the difference was very striking. A small portion of the globes, drilled with ashes alone, also exhibited a similar inferiority.

It should be observed, however, that in this experiment the land was probably more suited for Swedes than white turnips; but, on the other hand, the lateness of the season was more unfavorable to the Swedes, besides which the crop previous to the globes had been manured with stable-dung, while the other field had received no dressing since 1843.

Supposing that these results are to be attributed to the greater suitability of the manure for Swede, and not owing to other causes, the result is certainly in keeping with the comparative analysis of the ashes of Swedes and white turnips, which tells us that the former contains 403 lbs. of phosphoric acid, and the latter only 73 lbs. in 100,000 lbs. each.

It must be evident from this circumstance that white turnips do not require so large a quantity of bones, whether vitriolized or not; and it also corresponds with the well-known facts that Swedes require a larger quantity of dung to supply the necessary phosphoric acid, and also that white turnips on favorable land can be raised with ashes alone far more easily than Swedes.

I would therefore recommend in all cases, with white turnips, that a less quantity of vitriolized bone be employed, and that guano, or some other manure possessing its properties, should be used in combination with it.

In May last, a portion of land, consisting of 1½ acres, was drilled with Matson's green top globes, and manured with 1 bushel of sulphated bones, 1 cwt. of African guano, and about 25 bushels of turf-ashes, per acre. The crop was a very good one, exceeding 20 tons to the acre.

In several instances within my own knowledge, where guano has been used with ashes, the crop has been destroyed by the pungency of the manure, probably owing to the ammonia which it contains. There is no danger of

this taking place with vitriolized bones; and I have found, though seeds will not vegetate if entirely surrounded with them, they readily will if the manure is mixed with twice its weight of mould.

The last season has not been a favorable one for displaying the peculiar advantages of vitriolized bones; or, rather, it has been from its wetness so favorable for common bones, and every other description of manure, that an indifferent field of turnips has been the exception and not the rule. It is in a dry season, when the fly is particularly rife and active, when crop after crop is destroyed by this entomological pest, that the advantage of insuring a vigorous growth to young plants is properly appreciated. Among all the specifics or antidotes for the fly, there is none, I believe, equal to the employment of vitriolized bones. Hitherto I have not met with or heard of a single instance in which it has failed to force the plants out of the way of the fly. It is in a dry season, too, that the advantages of early and vigorous growth are shown, when the plant may languish for weeks for want of rain with ordinary manures, and thus lose time that never afterward can be compensated for.

In a garden experiment tried on a small scale, to show the effect of different preparations in forcing the young plant out of ground, I found the following results:

1. Vitriolized bone applied in solution above the seed caused the plant to appear on the fourth day.

2. The same applied below the seed brought up the plant on the fifth day.

3. Vitriolized bones as compost brought up the plant on the sixth day, both when applied above and below the seed.

4. Sulphuric acid and water below the seed caused the turnip to make its appearance on the sixth day.

5. Bone-dust below the seed brought up the plant on the seventh day, the same time as it appeared where no manure was employed.

In the above instances, with the exception of the fourth, the expense of the manure was the same in each case.

General Conclusions.

From the facts and reasons which we have detailed and urged in our preceding Essay, as well as from information supplied by previous experimenters, we may deduce the following conclusions:

1. That superphosphate of lime is the essential manure for turnips, and particularly for Swedes. That with it alone a good crop can be raised; but without it the turnip will not thrive, however rich the manure may otherwise be.

2. In preparing the mixture, the bones should be in as fine a state as possible.

3. That sulphuric acid, from its greater strength and cheapness, is preferable to muriatic acid.

4. That water, in the proportion of one-half the weight of the acid, should be first sprinkled over the bones.

5. The proportion of sulphuric most economical to employ should not be less than one-third, nor more than one-half the weight of the bones, and that probably the medium between these two quantities is most advantageous.

6. That the mixture can be applied either diluted with a considerable quantity of water by the aid of a water-cart, or with ashes by means of an ordinary drill. That though the former may be more speedy in its effects, the latter can be more conveniently applied, and has the advantage of admitting the addition of a large quantity of ashes.

7. That vitriolized bones may be used either alone or with other manures, and that when the latter are at hand, it is more advantageous to use the former in combination with them. For instance, if there are 30 acres to be prepared, and only sufficient dung to dress 15 acres, it is better to give a half-dressing of dung over the whole of the turnip break, and make up the deficiency by means of sulphated bones. Thus the plant will be forced in its early, and supported in its later growth. For the same reason, vitriolized bones may be advantageously combined with guano.

8. That vitriolized bones are equally advantageous to the second year's crop, when the turnips are either wholly or partially fed off with sheep.

9. That, while the economy of this manure is thus proved by practice, it can be as readily explained by theory, *e. g.*: The tops of Swedes are known to possess double the phosphoric acid contained in the bulbs. Thus the superphosphate of lime in the manure causes the rapid development of the leaves—one of its peculiar properties. The leaves being thus early and largely developed, are enabled to extract a considerable portion of nourishment from the atmosphere—much more, indeed, than where the leaves are small and backward. The difference between the amount of food derived from the atmosphere by a forward and flourishing crop, and that obtained by a backward and dwarfish crop, is so much absolute gain to the farmer, or rather to the land. It costs nothing on the one hand, but yields considerably to the land if the crop is fed off on the other. A manure that would thus force on the turnip in the early stages of its growth, was long felt to be a desideratum by agriculturists. This want has now been supplied; and even if this were the only recommendation sulphated bones possessed, its discovery and introduction would still be a boon.

Lastly. The value of vitriolized bone may now be considered to be fully and fairly established. Its claims rest not on the assertions of a few experimenters. It has been tried during the last season by hundreds with success, and in the next it will be tried by thousands. It affords, in fact, a triumphant

answer to the question—What has science done for Agriculture?

Southampton, Feb. 27, 1846.

* * The preparation of bones for turnips, as described by Mr. Pusey (being heated with

ashes), and other substances, has been long practiced with success; and this preparation causes a softening of the substance so much that the smaller parts become immediately proper for the food of plants.

J. KIMBERLEY.

LIQUID-MANURE CART,

FOR FIELD-CROPS, GARDENS, AND TOBACCO-BEDS.

WE rarely see one of the carts at work, sprinkling the streets so evenly and handsomely, to lay the dust in the towns, without thinking how useful such a contrivance would be, on every farm or plantation, to water, and at the same time manure, lawns and tobacco-beds, and small squares or beds, such as plant-beds, strawberry-beds, &c. and in gardens. Quite sure we are that no mechanic in a town would suffer, in his business, the vital damage that the planter suffers for want of early plants, if any particular difficulty in his way could be obviated as easily as the planter might do this, if he has only water at command—and that every farmer should have who has *roofs on his houses*.

Let a plant-bed be made—a permanent one, adjacent to water. If the soil is not exactly suitable, a permanent one may easily be *compounded and made* there; and then how easy it would be, in dry weather, to water one large bed, once a day, if necessary, by means of one of these *liquid-manure carts*, either with water alone, or the water might be impregnated with some fertilizing substance, as *guano*, or *tobacco*, or *the litter of stables* or *the cow-yard*. Besides this, a machine for sowing grain or plaster would serve to sprinkle lime, or ashes, or other manure, or even *common "road dust;"* or this might be done by hand, and some appliance of this sort might, perhaps, serve not only to manure the plants, but to *destroy or prevent the fly*. This suggestion is hazarded on the following remark of Mr. Baker, a learned entomologist, in a late number of the London Farmer's Magazine. We shall give the whole of his lecture "ON INSECTS DESTRUCTIVE TO GROWING CROPS," if we can command room for it in this number. But the particular observation applicable to our subject here is one relating to the *turnip fly*. "The best mode of getting rid of these insects," he says, "is by a very simple process. I am quite satisfied that there is no method so good as the application of *common road-dust*, which should be strewed with the hand upon the rows of plants, early in the morning, when the dew is upon them. It will be found that they will not touch any of the plants upon which the dust has fallen." Now although it does not follow that road-dust will repel the attacks of the fly so destructive to the tobacco-plant in the bed, yet it may do it; and the experiment is easily made.

Let the planter and the farmer be ambitious to discover remedies for himself against the calamities that overtake his labors, and not ingloriously wait for these discoveries to be made by other classes, or for suggestions to come from other countries than his own.

How many of the improvements in agricultural implements have been struck out by the ingenuity of *practical farmers*? One or two occur to us at the moment: the *horse-rake*, invented by PENNOCK, of Delaware—a practical Quaker

farmer, we believe—who is also said to have improved on the English *drill machine*; but we know not exactly in what that improvement consists, although we have endeavored to get a history and drawings to explain it, and to secure for him the enduring record of the credit and gratitude to which he is entitled, even above that which is reserved in our republican country for blood-stained patriots.


To return to this liquid-manure cart. It might often happen that the use of it would not be needed, still it might be used for spreading the liquid manure, which ought to be collected at least from all stables to be hereafter constructed.

Spaces might be left in these beds, unsown, at distances corresponding with that between the wheels of the cart, and one between for the horse or ox. One ox would be all-sufficient. The *spreaders*, attached to these carts, admit of being so regulated as to distribute the contents of the hogshead more or less freely.

The best liquid-manure cart would be a good subject for a premium to be offered by our agricultural institutes and societies. The one here described has lately obtained the premium at several agricultural exhibitions in Scotland, where the progress of agricultural improvement, especially as it is promoted by the application of science and mechanical ingenuity, is at this day, probably, more marked and visible than in any country on the globe.

"It may not be out of place to notice, under this head, a liquid-manure cart, of a very approved construction, which was invented a few years ago by Mr. George Morice, Kenmuck, near Keith-Hall. The cask for containing the liquid is mounted upon an axle and wheels, which are attached in the usual manner to a pair of shafts. The machinery for maintaining the cask always in a horizontal position, and for regulating the discharge of the liquid, is both simple and ingenious.—At the foremost end of the cart is fixed what is technically termed a 'bridle,' with a mortise in its center, in which works an upright bar of iron perforated with a number of holes, and fastened to the cross-bar of the shafts.—Attached to this bridle, and within reach of the driver, is a lever, by means of which either end of the cask can readily be elevated or depressed to suit the irregularities of the ground, or in traveling up or down hill. From the circumstance of the cask being maintained in a horizontal position, the weight on the horse's back, as well as the pressure on the discharging apparatus, is always uniform, however uneven may be the surface of the ground. The apparatus at the posterior end of the cask, for regulating the flow of the liquid, is also very simple and effective. The discharging orifice is furnished with a 'shut-

ter,' which is opened to any required extent by means of a short lever, and attached to it is an iron pipe for conveying the liquid into the spreading box. This short pipe is closed at its outer extremity, but is provided with two apertures, one on each side, through which the liquid, in escaping from the cask into the spreader, diverges equally to both sides. By means of the lever and shutter, the flow of the liquid can be regulated to any required quantity, while the perforations in the bottom of the spreader admit of being widened or narrowed, as may be found necessary. The spreading box is commonly seven and a half feet long, but can be made to any required length, and is easily detached from the cart after being used. The wheel-rims are five inches in width, that the grass may not be injured or cut up, and the axle is curved downward to allow the cask to be kept as low as possible. The weight of the whole cart when the cask (which contains 118 imperial gallons) is full, is 19 cwt. This liquid-manure cart has obtained a prize at each of the annual competitions of the Aberdeen, Banff, and Kincardine Agricultural Association. The inventor is at present attempting some farther improvements. The price at Aberdeen is £10 10s." [\$52.]

 The water in which potatoes have been boiled, sprinkled over grain, plants, etc. completely destroys all insects in every state of their existence from the egg to the fly.

We cut the above from a paper, and it *may* be so, but all that is in print is not gospel.

HOGS.

THIS is a subject on which every one likes to be allowed to *cut and come again*. If any one desires to see it "*done up brown*," that is, *well done*, let him look at The Cultivator for October and November. We wish we had room for these articles. The writer has evidently "eaten salt" with practical farmers, if he be not one himself, and knows "a hawk from a handsaw." He designates clearly the difference in the quality of various breeds of swine, and why and wherein it is that a breed eminently suited to one locality and purpose may be as eminently unfitted for another. We have put extracts from these articles aside for early insertion.

Of the (Captain John) MACKAY breed, so highly and justly praised, the writer says truly that "only a few of them now remain which retain the characteristics of the originals in such a degree as to be recognized."

On this, as well as on all subjects near akin to it, Major Jacques, of Massachusetts, stands at the head of the well informed; and he told us, we remember, some 18 months since, how Mr. WEBSTER had sent a long distance for a genuine *Simon Pure* of this breed, and which we believe he has now at Marshfield.

If we have not given much space to this subject, it is under the impression that it is one with which most farmers are familiar, and that it is altogether so much within the control of every farmer to modify and manufacture his hogs to his liking and purposes, that very little new can be said about it. The Cultivator gives about all that need be noted.

Forty years ago, the "*Parkinson*" was the best breed of hogs in Maryland and Virginia. He was a spotted hog, but much lighter in color than the Berkshire—white, with black spots, rather than black, with white spots; stood on a stronger foundation; was square built, like a Dishley sheep, with a good ham, and activity and constitution to travel in search of his victuals, instead of having it brought to him. But, in our judgment, the best breed of hogs ever brought to this country was a black hog, sent many years ago—say twenty, at least—into Maryland, to the Editor of this Journal, then Editor of the American Farmer, by a Mr. WRIGHT—brother-in-law of CHARLES CHAMPION, from whom we imported the bull Champion, and heifers White Rose and Shepherdess; also the bull and two heifers for Gen. Van Rensselaer, that were brought into this State. Mr. Wright came consigned to us, and of course, as was then our wont and delight, we did the best we could by him, as a "stranger within our gates." We did not leave him to be fleeced by tavern-keepers, for we took him to ourselves. After going to many Agricultural Fairs, and being well pleased, on going away he said: "Well, Mr. Skinner, there is one thing I can send you better than any in your country, and that is hogs!"—and accordingly he sent a *black boar and sow*; such animals for shape of the right sort, and meat of the right sort, as we have never seen, before or since. The breed was sent into Virginia, where it got the name of "Skinner's breed," and has been much inquired for lately.—Heartily do we wish the name may never belong to anything worse; for what can man or beast do better than well fulfill the highest purposes for which Nature designed him? True, a hog is a glutton, and so is man; but, while re-

pletion is congenial to the constitution and growth of the hog, the gluttonous man surfeits himself against light and reason, to the destruction of his health and his usefulness.

True, too, the stronger hog will beat off the smaller, and rob him of his corn, or potatoes, or apples: but does not, all the world over, the stronger nation trample on the weaker (as the hawk devours the sparrow), and go out of his way to take their lands or—*knock out their brains?* What have we done with the Indians, who owned all this country as much as a man owns the pen in his hand?

Well, of these superb English black hogs, we sent a pair to Gen. LAFAYETTE, and the old General, (blessed be his memory!) whenever distinguished Englishmen and foreigners would go to LA GRANGE, would take them out to his barn-yard, and show exultingly and boast of his *American hogs!* “There,” would he say, “you have no such *hogs as these in England!*” By the by, the old General’s chamber looked out upon his barn-yard, to the economy of which he paid great attention. It was one of his *habits* to go, the first thing every morning, to the barn-yard, carrying in his pocket a *hard-boiled egg*, and the first animal attended to was a *one-eyed American Raccoon*; to whom, with his own hand, he gave the egg for his breakfast.

We were going to give some extracts from *The Cultivator*, but, as they would necessarily be brief, we think it better to postpone: and, besides, we much doubt the propriety of our copying much, if anything, from American agricultural journals, for two reasons: first, we have a right to presume that we could not return the obligation we should be under in eating out of their basket, since they never dip into ours; and secondly, because we hope all these cheaper papers are taken, and that more for their merit than their cheapness, by all our patrons, as we *sincerely think they should be.*

VIRGINIA LANDS.

MR. EDITOR: I herewith give you some extracts from a letter I received from a friend of mine who is now living in Surry County, Virginia. You are aware that much is said and a great deal written and published about the advantages of going to Virginia, to buy land, and farm. Feeling an interest in giving the experience of others well calculated to judge, for the benefit of your readers, I have copied part of the letter in order that some might be benefited—the writer is a gentleman somewhat advanced in life, raised a farmer, and always followed farming; he had a good training and good land to operate on, in a part of Chester County, Pa., that will compare with any other land in the State, at least in any other part of Chester Co. Added to this, he is an agricultural statistic—a plain, blunt man, who writes what he thinks and sees, without fear of being called in question by any. I had written to him and stated several points that I wished information on. His letter takes these up separately and answers them very satisfactorily.

“SEPTEMBER 1, 1846.

“Never in my recollection have I enjoyed good, uninterrupted health so long, as since I
(575)

came here, and all the family have been well except M., who has had something of her old complaint (I believe erysipelas.) I see nothing here indicative of sickness; if people anywhere would live as many do here, they would be sickly—out late at night, hunting, and going home drunk, and reckless of every means to preserve health. If not so, why the undue proportion of sickness and death among the miles, which is about 4 to 1? In most countries they are about equal. I do believe, all things considered, there cannot be a better place to live in—a more delightful climate. I have felt far warmer weather in Pennsylvania than here; and my Philadelphia newspaper says it has been warmer at New-York than here. We have as kind neighbors as ever honored a neighborhood; some of them have endeared themselves to us beyond what you could imagine. I speak advisedly when I say, a man can fix himself here better for \$1,000 than he can for \$10,000 in Pennsylvania. Two gentlemen, one from near Lancaster and one from Franklin Co., were here to see the place, through a letter I wrote to Rev. M. B. They all like the place very much, and wonder why I should

be the first discoverer. One of them was looking at a place of 600 acres, price \$1,000; he told me while looking at the land, that he could sell his place of 120 acres before he got home, for \$134 per acre, \$15,720, and he was sure, if he was a young man, in seven years he could make the place here as good as his own. Only look at that! He is a man of intelligence, and owns one of the best farms in Lancaster County, and was attracted here by M. B. reading to him a paragraph of my let-

ter. Why, sir, there are inexhaustible marl beds here, that on analysis contain 97 per cent. pure lime. Pequa lime, Chester Co., Pa., contains 20 per cent. magnesia, a very deleterious article in Agriculture. I have seen the western parts of Pennsylvania and Virginia and the eastern part of Ohio, and have read and heard much of other parts, and am free to say, there is none equal to this."

[American Farmer.]

WHAT THE FARMER WANTS.—Next to good crops, the farmer wants a market for them. He will sow, he will reap, he will labor in vain, if at the end of his toil he can find no price, no market, no vent for his produce. "We now realize, beyond a cavil or a doubt," says the Trenton Gazette, "that England and Europe will not afford this market. With her ports almost free to whatever we please to send them, with but a moderate duty upon bread stuffs, with wants greatly enlarged by a deficiency in her own crops; yet we find England fairly gorged with our produce, and unable to consume the tenth part of what we have to spare. It is certain, therefore, that we cannot send it there. Some other outlet must be found for it—some other demand created. Home industry—the diversified and well paid labor of our own country—the increase of the class of consumers among ourselves—these only can supply the indispensable encouragement and support to Agriculture."

PRICES CURRENT.

[Corrected, November 21, for the Monthly Journal of Agriculture.]

| | | | | |
|---|---------------|-------------|---|---------------------------|
| ASHES—Pots, 1st sort..... | \$ 100 lb. | 5 — @ 5 12½ | Staves, White Oak, pipe, P. M..... | 40 — @ — 45 |
| Pearls, 1st sort, '46..... | 5 75 | @ — | Staves, White Oak, hhd..... | 40 — @ — |
| BEE-SWAX—American Yellow..... | 27 | @ 27½ | Staves, White Oak, bbl..... | 30 — @ — |
| CANDLES—Mould, Tallow..... | \$ lb. | 9½ @ 11 | Staves, Red Oak, hhd..... | 24 — @ 26 |
| Sperm, Eastern and City..... | 26 | @ 38 | Hoops..... | 25 — @ 30 |
| COTTON—From..... | \$ lb. | 8½ @ 11½ | Scantling, Pine, Eastern..... | — @ 15 |
| COTTON BAGGING—American..... | 10½ | @ 13 | Scantling, Oak..... | 30 — @ 35 |
| CORDAGE—American..... | \$ lb. | 11 — @ 12 | Timber, Oak..... | \$ cubic foot — 22 @ — 31 |
| DOMESTIC GOODS—Shirtings, P. y..... | 5 | @ 11 | Timber, White Pine..... | 15 — @ — 22 |
| Sheetings..... | 6½ | @ 15 | Timber, Georgia Yellow Pine..... | 20 — @ — 22 |
| FEATHERS—American, live..... | 25 | @ 30 | Shingles, 18 in..... | \$ bunch 1 75 @ 2 — |
| FLAX—American..... | 7 | @ 7½ | Shingles, Cedar, 3 feet, 1st quality..... | 25 — @ — |
| FLOUR & MEAL—Genesee, P. bbl..... | 5 37½ | @ 5 50 | Shingles, Cedar, 3 feet, 2d quality..... | 22 — @ 23 |
| Troy..... | — | @ — | Shingles, Cedar, 2 feet, 1st quality..... | 17 — @ 18 |
| Michigan..... | 5 25 | @ 5 37½ | Shingles, Cedar, 2 feet, 2d quality..... | 15 — @ 16 |
| Ohio, Flat Hoop..... | 5 25 | @ 5 37½ | Shingles, Cypress, 2 feet..... | 13 — @ 14 |
| Ohio, Round Hoop..... | — | @ — | Shingles, Company..... | — @ 28 |
| Ohio, via New-Orleans..... | — | @ — | MUSTARD—American..... | 16 — @ — 31 |
| Pennsylvania..... | — | @ — | NAILS—Wrought, 6d to 20d..... | \$ lb. 10 — @ — 12½ |
| Brandywine..... | 5 50 | @ — | Cut 4d to 40d..... | 4 — @ — 4½ |
| Georgetown..... | 5 50 | @ — | PLASTER PARIS—P ton..... | 2 12½ @ — |
| Baltimore City Mills..... | — | @ — | PROVISIONS—Beef, Mess, P bbl..... | 7 — @ 8 — |
| Richmond City Mills..... | 7 — | @ 7 25 | Beef, Prime..... | 5 75 @ 6 25 |
| Richmond Country..... | 5 50 | @ — | Pork, Mess, Ohio..... | 9 50 @ 9 62½ |
| Alexandria, Petersburg, &c..... | 5 50 | @ — | Pork, Prime, Ohio..... | 8 — @ — |
| Rye Flour..... | 3 75 | @ 4 — | Lard, Ohio..... | \$ lb. 7 — @ 8 — |
| Corn Meal, Jersey and Brand..... | 3 93½ | @ 4 — | Hams, Pickled..... | 5½ @ 6 — |
| Corn Meal, Brandywine..... | 18 | @ — | Shoulders, Pickled..... | 4½ @ 4½ |
| GRAIN—Wheat, White..... | \$ bush. 1 15 | @ 1 20 | Sides, Pickled..... | — @ — |
| Wheat, Red..... | 1 05 | @ 1 08 | Beef, Smoked..... | \$ lb. 8½ @ 9 — |
| Rye, Northern..... | 77½ | @ 78 | Butter, Orange County..... | 16 — @ 18 |
| Corn, Jersey and North..... | (meas.) 78 | @ 80 | Butter, Western Dairy..... | 13 — @ 15 |
| Corn, Southern..... | (measure) — | @ — | Butter, Genesee..... | — @ 7 — |
| Corn, Southern..... | (weight) 73 | @ 75 | Cheese, in casks and boxes..... | 7 — @ 7½ |
| Oats, Northern..... | 36 | @ 37 | SEEDS—Clover..... | \$ lb. 7 — @ 7½ |
| Oats, Southern..... | — | @ — | Timothy..... | P tierce 11 — @ 15 — |
| HAY—North River in bales, P 100 lb..... | 40 | @ 45 | Flax, Rough..... | 9 25 @ 9 50 |
| HEMP—American, dew-rotted, ton..... | 85 | @ 95 | SOAP—N. York, Brown..... | \$ lb. 3½ @ 6 — |
| " " water-rotted..... | 130 | @ 185 | TALLOW—American Rendered..... | 8½ @ 9 — |
| HOPS—1st sort, 1845..... | 9 | @ 12 | TORRACCO—Virginia..... | @ lb. — @ 6 — |
| IRON—American Pig, No 1..... | 30 | @ 32 50 | North Carolina..... | 2½ @ 5 — |
| " " Common..... | 22 50 | @ 25 — | Kentucky and Missouri..... | 2½ @ 7 — |
| LIME—Thomaston..... | \$ bbl. 83 | @ 85 | WOOL—Am. Saxony, Fleeco, P lb..... | 35 — @ — 37½ |
| LUMBER—Boards, N.R., P.M. ft. cr. 30..... | 30 | @ 35 — | American Full Blood Merino..... | 30 — @ 32 |
| Boards, Eastern Pine..... | 11 | @ 13 — | American ½ and ¾ Merino..... | 26 — @ 28 |
| Boards, Albany Pine..... | P pec. 10 | @ 18 — | American Native and ¼ Merino..... | 22 — @ 24 |
| Plank, Georgia Pine..... | P.M. ft. 27 | @ 30 — | Superfine, Pulled..... | 25 — @ 28 |



Eli Whitney

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MEMOIR OF ELI WHITNEY,

INVENTOR OF THE COTTON-GIN.

THE FARMER OF MOUNT VERNON scarcely did full justice to the benefactors of the Agriculture of a country, when he declared, in respect of that most important of all national concerns, "I know of no pursuit in which more real important service can be rendered to any country, than by *improving its Agriculture.*" A yet higher and juster estimate of the value of such services was pronounced by the celebrated Grecian warrior and historian, in saying that he considered Agriculture as the "nursing mother of all the arts." "Where it succeeds," he added, "the arts all thrive; but where the earth is suffered to be uncultivated, there the arts all perish." It is but too true that men—especially public men, who have the public interests in charge—rarely reflect on the absolute connection between Agriculture and all other pursuits, and how positively all of them depend for their prosperity on the prosperity of agricultural labor. Like the blessings of good health, and the vital importance of the air we breathe, in the daily enjoyment of them we forget that they are absolutely indispensable not only to the comforts of life, but to life itself.

What, it may truly be asked, would soon be the condition of every class of society, and every human employment, were the implements of husbandry to be lost, and with them all knowledge of the art of cultivating the earth, from which the multiplied and various fruits of civilization spring as directly as the ripe corn itself springs from the seed? Who does not see that man, thrown back into a state of nature, to contend for very life against the birds of the air and the beasts of the forest, famine would soon stalk abroad, and ignorance and barbarism resume their empire over the earth. Does it not, then, follow that he who most improves the implements and the knowledge of this great art—which lies at the base of all others, as the pedestal at the base of the monument—by thus multiplying the means of subsistence, so far releases the mind from sordid and corroding cares, opens to genius the field for useful invention, and entitles himself to the highest consideration and reward that a discerning people have it in their power to bestow! Nay, in what country, it may be asked, have any arts long flourished, where those by whose genius and labors they have been most advanced have been recompensed with neglect and ingratitude? Yet, shame to say, has not that been too often the fate, in our country, of those plain, unpretending men

in civil life, whose inventions have brought landed capital into profitable activity, and created for manufacturing and commercial enterprise their greatest facilities?

Beyond the precarious, ill-secured and insufficient immunities of a patent-right—which, if worth the expense of procuring, is sure to be set upon by pirates, as the eagle is assailed by the meanest of the feathered race—we may demand to know what honorary distinction or recompense has been voted by the people or bestowed by the Government of the United States on those whose labor-saving contrivances have multiplied the products of agricultural industry, and facilitated the exchanges of internal and of foreign commerce, and the spread of knowledge? Where are the votes of thanks, the medals and the pensions voted to authors and investigators in the natural and useful sciences? or to those patriots who assisted in laying the foundation of our great civil structure? or to those again, few and far between, who have gathered up and luminously arranged the scattered and fading lights of our national history? Look at PRESCOTT, for example, who, though physically blind, has shed such a blaze of light on the *first* “Conquest of Mexico,” reflecting in his history all the incidents of that great event, from its inception to its close, as faithfully as the image is reflected by the mirror, and establishing for his country another, if not her highest, claim to eminent rank in the republic of letters! Yet may it not be doubted whether his name would be allowed to find a place in any resolution of Congressional thanks, so freely voted to the youngest warrior whom fortune may have favored with a chance to flesh his maiden sword in Mexican blood! And are such to be forever our proofs of popular discernment—such our manifestations of republican justice? But to the subject of our memoir, if only to show that one pen, at least, is ready, however inadequately, to render the tribute which is due to the memory of a countryman whom history will rank, for his inventive talents, along with poor heart-broken FITCH, and RUMSEY, and CLINTON and FULTON, all as having added incalculable measure to the wealth and power of their country.

ELI WHITNEY was born December 8th, 1765, in Westborough, Massachusetts, where, and in the same house, some of the family still reside. His parents belonged to that middle class which in New-England, above all countries, constitutes the mass—the bone and sinews of society. By the habitual diligence and frugality which may be said to characterize the people of that venerable Commonwealth, they managed to provide well for their family. It is from that class that have arisen most of those in New-England who have attained high eminence and usefulness; nor, as it has been well said, is any other situation in society so favorable to the early formation of those habits of economy, both of time and of money, which, when carried forward into the study of the scholar, or the various fields of active enterprise, afford the surest pledge of success. Thus it is that those who have attended the annual Fairs in New-England must have observed, with admiration, that the plows and carts contending, always with ox teams, are usually managed by their owners in person and unassisted—being every-day working farmers: such as compose also their Committees of Judges, who often draw up, on the spur of the occasion, well-written and lucid reports. From Secretary Pickering to Senators Webster and Davis, most of their most distinguished men have been reared in the performance of all the practical operations of New-England husbandry.

As biography would lose much of its entertainment, as well as its usefulness, if it did not relate incidents in themselves trivial, but which serve at once to show or to confirm the youthful bent of the character, we shall accordingly re-

peat here what has been said of Whitney's earliest indications of mechanical genius—premi-*ing*, however, that we must otherwise confine this notice chiefly to the bearing of his great invention, the *cotton-gin*, on the *interests of Agriculture*. To follow him, pleasing as the task might be, into all the diversified walks of mechanical ingenuity, would be wandering too much beyond the limits of agricultural biography, to which we are restricted. Even thus far, pleasing as is the duty, we could not indulge, to the exclusion of more practical matter, were it not to give assurance to the votaries of the plow that here, at least, if nowhere else, a Register shall always be open, where justice may be done to those real benefactors of their race to whom the more solid rewards of Government are denied by the wise policy of enlightened legislators, *faithfully* representing a discerning and—alas! may it now be added, without the smallest spice of party spirit?—a *warlike people*!

Of Whitney's early passion for mechanical employments, his sister gives the following account: "Our father had a workshop, and sometimes made wheels, of different kinds, and chairs. He had a variety of tools, and a lathe for turning chair-posts. This gave my brother an opportunity of learning the use of tools when very young. He lost no time: but, as soon as he could handle tools, he was always making something in the shop, and seemed not to like working on the farm. On a time, after the death of our mother, when our father had been absent from home two or three days, on his return he inquired of the housekeeper what the boys had been doing? She told him what B. and J. had been about. 'But what has Eli been doing?' said he. She replied, 'He has been making a fiddle.' 'Ah!' added he, despondingly, 'I fear Eli will have to take his portion in fiddles.' He was at this time about twelve years old. His sister adds that this fiddle was finished throughout like a common violin, and made tolerably good music. It was examined by many persons, and all pronounced it to be a remarkable piece of work for such a boy to perform. From this time he was employed to repair violins, and had many nice jobs, which were always executed to the entire satisfaction, and often to the astonishment, of his customers. His father's watch being the greatest piece of mechanism that had yet presented itself to his observation, he was extremely desirous of examining its interior construction, but was not permitted to do so. One Sunday morning, observing that his father was going to meeting, and would leave at home the wonderful little machine, he immediately feigned illness as an apology for not going to church. As soon as the family were out of sight, he flew to the room where the watch hung, and, taking it down, he was so delighted with its motions that he took it all in pieces before he thought of the consequences of his rash deed; for his father was a stern parent, and punishment would have been the reward of his idle curiosity, had the mischief been detected. He, however, put the work all so neatly together that his father never discovered his audacity until he himself told him, many years afterward."

Whitney lost his mother at an early age, and, when he was thirteen years old, his father married a second time. His step-mother, among her articles of furniture, had a handsome set of table-knives she valued very highly, which our young mechanic observing, said to her, "I could make as good ones, if I had tools; and I could make the necessary tools, if I had a few common tools to make them with." His step-mother thought he was deriding her, and was much displeased: but it so happened, not long afterward, that one of the knives got broken, and he made one exactly like it in every respect, except the stamp on the blade. This

he would likewise have executed, had not the tools required been too expensive for his slender resources.

When Whitney was fifteen or sixteen years of age, he suggested to his father an enterprise, which was an earnest of the similar undertakings in which he engaged on a far greater scale in later life. That being the time of the Revolutionary War, nails were in great demand, and bore a high price. At that period, nails were made chiefly by hand, with little aid from machinery. Young Whitney proposed to his father to procure him a few tools, and to permit him to set up the manufacture. His father consented, and he went steadily to work, and suffered nothing to divert him from his task, until his day's work was completed. By extraordinary diligence, he gained time to make tools for his own use, and to put in knife-blades, and to perform many other curious little jobs, which exceeded the skill of the country artisans. At this laborious occupation the enterprising boy wrought alone, with great success, and with much profit to his father, for two winters, pursuing the ordinary labors of the farm during the summers. At this time he devised a plan for enlarging his business and increasing his profits. He whispered his scheme to his sister, with strong injunctions of secrecy; and, requesting leave of his father to go to a neighboring town, without specifying his object, he set out on horseback in quest of a fellow laborer. Not finding one so easily as he had anticipated, he proceeded from town to town, with a perseverance which was always a strong trait of his character, until, at the distance of forty miles from home, he found such a workman as he desired. He also made his journey subservient to his improvement in mechanical skill, for he called at every workshop on his way, and gleaned all the information he could respecting the mechanic arts.

In respect to his proficiency in learning while young, we are informed that he early manifested a fondness for figures, and an uncommon aptitude for arithmetical calculations, though in the other rudiments of education he was not particularly distinguished. Yet, at the age of fourteen, he had acquired so much general information as to be regarded, on this account, as well as on account of his mechanical skill, a very remarkable boy.

From the age of nineteen, young Whitney conceived the idea of obtaining a liberal education; but, being warmly opposed by his step-mother, he was unable to procure the decided consent of his father until he had reached the age of twenty-three years. But, partly by the avails of his manual labor, and partly by teaching a village school, he had been so far able to surmount the obstacles thrown in his way, that he had prepared himself for the Freshman class in Yale College, which he entered in May, 1789. An intelligent friend and neighbor of the family helped to dissuade his father from sending him to college, observing that "it was a pity such a fine mechanical genius as his should be wasted;" but he was unable to comprehend how a liberal education, by enlarging his intellectual powers and expanding his genius, would so much exalt those powers and perfect that genius as to place their possessor among the Arkwrights of the age, while, without such means of cultivation, he might have been only an ingenious millwright or blacksmith. While a schoolmaster, the mechanic would often usurp the place of the teacher; and the mind, too aspiring for such a sphere, was wandering off in pursuit of perpetual motion. While at home in the month of July, 1788, making arrangements to go to New-Haven, for the purpose of entering college, he was seized with a violent fever attended by a severe cough, which threatened to terminate his life. At length the disease centered in one of his limbs. A pain-

ful swelling, extending to the bone, ensued, which was finally relieved by surgical operation. After his recovery, he went to Durham, in Connecticut, and finished his preparation for college, under the care of that eminent scholar, Rev. Dr. Goodrich. As we are soon to accompany Mr. Whitney beyond the sphere of his domestic relations, we may mention here that he finished his collegiate education with little expense to his father. His last college bills were indeed paid by him, but the money was considered as a loan, and for it the son gave his note, which he afterward duly canceled. After the decease of his father, he took an active part in the settlement of the estate, but generously relinquished all his patrimony for the benefit of the other members of the family.

The propensity of Mr. Whitney to mechanical inventions and occupations was frequently apparent during his residence at college. On a particular occasion, one of the tutors, happening to mention some interesting philosophical experiment, regretted that he could not exhibit it to his pupils, because the apparatus was out of order, and must be sent abroad to be repaired. Mr. Whitney proposed to undertake this task, and performed it greatly to the satisfaction of the Faculty of the college.

A carpenter being at work upon one of the buildings of the gentleman with whom Mr. Whitney boarded, the latter begged permission to use his tools during the intervals of study ; but the mechanic, being a man of careful habits, was unwilling to trust them with a student, and it was only after the gentleman of the house had become responsible for all damages, that he would grant the permission. But Mr. Whitney had no sooner commenced his operations, than the carpenter was surprised at his dexterity, and exclaimed, "There was one good mechanic spoiled when you went to college."

Soon after Mr. Whitney took his degree, in the autumn of 1792, he entered into an engagement with a Mr. B. of Georgia, to reside in his family as a private teacher. On his way thither, he was so fortunate as to have the company of Mrs. Greene, the widow of Gen. Greene, who, with her family, was returning to Savannah, after spending the summer at the North. At that time it was deemed unsafe to travel through our country without having had the small-pox, and accordingly Mr. W. prepared himself for the excursion by procuring inoculation while in New-York. As soon as he was sufficiently recovered, the party set sail for Savannah. As his health was not fully reëstablished, Mrs. Greene kindly invited him to go with the family to her residence at Mulberry Grove, near Savannah, and remain until he was recruited. The invitation was accepted : but, lest he should not yet have lost all power of communicating that dreadful disease, Mrs. Greene had white flags (the meaning of which was well understood) hoisted at the landing, and at all the avenues leading to the house. As a requital for her hospitality, her guest procured the virus and inoculated all the servants of the household, more than fifty in number, and carried them safely through the disorder.

Mr. Whitney had scarcely set his foot in Georgia before he was met by a disappointment, which was an earnest of that long series of adverse events which, with scarcely an exception, attended all his future negotiations in the same State. On his arrival, he was informed that Mr. B. had employed another teacher, leaving Whitney entirely without resources, or friends, except those whom he had made in the family of Gen. Greene. In these benevolent people, however, his case excited much interest, and Mrs. Greene kindly said to him : "My young friend, you propose studying the law ; make my house your home, your room

your castle, and there pursue what studies you please." He accordingly commenced the study of law under that hospitable roof.

And here may we not pause and turn aside for a moment to remark what a field lies open for some man of capacity and generous temper to do credit to his country by sketching the portraits of eminent women of the Southern States—no, not exactly eminent, but whose noble deeds and dispositions would have gained eminence for any *man* in any age in which courage, humanity and high moral bearing under adversity have been esteemed worthy of cotemporary honor or historical renown.

The annals neither of our Revolutionary or subsequent times will ever have been filled up with anything like fullness or fidelity, until they shall have been made to relate at least the most conspicuous of the numberless instances of devoted heroism, of unshrinking fortitude and unfailing humanity displayed by high-bred Southern women, under the most trying bereavements and vicissitudes of the war—a war which seemed to reserve its fiercest rage for that devoted region. Their ready sacrifices of property—their ministerings with equal readiness to the wants and the sickness of friend and foe—of the soldier and the slave—such as should carry down their names, with Mrs. Greenes, to posterity, along with the most illustrious matrons of Greece or Rome. Who, let us ask, in the name of justice and patriotism, will take up this too long neglected task of chivalry and gratitude? But, to return to our narrative.

Mrs. Greene was engaged in a piece of embroidery in which she employed a peculiar kind of frame called a *tambour*. She complained that it was badly constructed, and that it tore the delicate threads of her work. Mr. Whitney, eager for an opportunity to oblige his hostess, set himself at work and speedily produced a tambour-frame made on a plan entirely new, which he presented to her. Mrs. Greene and her family were greatly delighted with it, and thought it a wonderful proof of ingenuity.

How curious would appear a recital of a series of extraordinary *accidents*, as they are termed, which have seemed to be turning pivots in the lives of eminent men, lifting them at once from obscurity to distinction, and leading perhaps more frequently to fortune, in military life, but sometimes to extraordinary mechanical inventions and profound discoveries in science, and sometimes influencing even the industry and the fate of whole nations. Every reader is familiar with the alleged *pomological* origin of the Newtonian philosophy, by the light of which we have lately seen one of his great disciples indicate, without looking for it, the existence and exact locality of a hitherto undiscovered planet, in a particular portion of immeasurable space, at a distance of one hundred thousand millions of miles!

All such events, however, which, from their suddenness and obscure or concealed causes, we are prompted, in our short-sightedness, to call accidents, or miracles, are really in the eye of philosophy but so many links, all of equal dependence on each other, in an unbroken chain of moral and physical causes and effects, which become causes in their turn, from the beginning of time to the present hour: and being, as all of them must be, the result of adequate influences to produce them—could not at the instant have happened otherwise than they have done. Thus it is under the same universal law that the sun goeth down in the west and the autumn leaf falleth to the ground. Thus it is, too, in the scheme of Providence, that nations tempered in the fire of adversity, rise under the auspices of good and wise counselors to prosperity and

greatness—until, intoxicated with power, they become demoralized, and degenerate, and cruel, and finally bow submissively to the rule of some upstart usurper, prepared again by Providence to govern and to punish those who had not virtue to govern themselves. *Quisque suos patimur manes*. After all, who cannot perceive that the greater or less perfection in all social arrangements and systems of government, consists in their presenting, or not, motives adequate to the insurance of virtuous deeds, and actions most conformable to the general weal? Hence the policy as well as the obligation which rests on all nations, and especially on republics, to see that the laws offer adequate incentives to patriotism, and that, above all things, reliable security and reward be held out to inventors and discoverers in the sciences and in useful branches of national industry. Without security there will not long be any industry or invention. No man will freely exercise his mental powers unless he be well convinced that he will be allowed to reap all the advantages accruing from his skill or genius, no more than the merchant will invest his capital in securities tainted with the least odor of suspicion. The inventions of such men as Bogardus and Whitney constitute their legitimate *property*; and a most sacred and honorable species of property it is; and it has been well observed, that if, owing to the weakness or ignorance of Government, the security of property or of inventions be materially impaired, all sorts of industrious undertakings that do not promise *immediate* return, would be immediately abandoned. The want, in such cases, of adequate security and reward to individuals, is in truth one of the greatest of public calamities. In their absence we should soon find nothing but the most abject poverty and barbarism; and supposing other things equal, the wealth and civilization of nations would be pretty nearly proportioned to the security of property they enjoy and the reward they bestow on scientific and distinguished benefactors of industrial pursuits and men of eminent virtue in civil trusts. Every other circumstance conducive to the advancement of industry may exist in a country, but without security to property and to inventions these will be of no material service. A high degree of security and rewards proportioned to the usefulness of inventors and the integrity of public service will compensate for many disadvantages in the condition and circumstances of a nation, but nothing can make up for the want of these. They constitute, in a word, the *sine qua non* of every species of prosperity.

We are now at that point in our narrative where one of those prominent and proximate circumstances usually denominated accidents was to put in immediate play the mechanical genius of Eli Whitney for a new combination of mechanical power, that was destined to revolutionize not merely the agricultural industry of our own country, but, in coöperation with the subsequent invention of ARKWRIGHT, of kindred genius, was to influence the manufacturing, commercial and money power of the whole universe.

Not long afterward a large party of gentlemen came from Augusta and the Upper country, to visit the family of Gen. Greene, consisting principally of officers who had served under the General in the Revolutionary army. Among the number were Major Bremen, Major Forsyth, and Major Pendleton. They fell into conversation upon the state of Agriculture among them, and expressed great regret that there was no means of cleaning the green seed cotton, or separating it from its seed, since all the lands which were unsuitable for the cultivation of rice would yield large crops of cotton. But until ingenuity could devise some machine which would greatly facilitate the process of cleaning, it was in vain

to think of raising cotton for market. Separating one pound of the clean staple from the seed was a day's work for a woman; but the time usually devoted to picking cotton was the evening, after the labor of the field was over. Then the slaves, men, women and children, were collected in circles with one whose duty it was to rouse the dozing and quicken the indolent. While the company were engaged in this conversation, "Gentlemen, (said Mrs. Greene,) apply to my young friend, Mr. Whitney—he can make anything." Upon which she conducted them into a neighboring room, and showed them her tambour frame, and a number of toys which Mr. W. had made or repaired for the children. She then introduced the gentlemen to Whitney himself, extolling his genius and commending him to their notice and friendship. He modestly disclaimed all pretensions to mechanical genius; and when they named their subject, he replied that he had never seen either cotton or cotton seed in his life. Mrs. G. said to one of the gentlemen, "I have accomplished my aim. Mr. Whitney is a very deserving young man, and to bring him into notice was my object. The interest which our friends now feel for him will, I hope, lead to his getting some employment to enable him to prosecute the study of the law."

But a new turn that no one of the company dreamed of, had been given to Mr. Whitney's views. It being out of season for cotton in the seed, he went to Savannah and searched among the warehouses and boats, until he found a small parcel of it. This he carried home, and communicated his intentions to Mr. Miller, who warmly encouraged him, and assigned him a room in the basement of the house, where he set himself at work with such rude materials and instruments as a Georgia plantation afforded. With these resources, however, he made tools better suited to his purpose, and drew his own wire, (of which the teeth of the earliest gins were made,) an article which was not at that time to be found in the market of Savannah. Mrs. Greene and Mr. Miller were the only persons ever admitted to his workshop, and the only persons who knew in what way he was employing himself. The many hours he spent in his mysterious pursuits afforded matter of great curiosity and often of raillery to the younger members of the family. Near the close of the winter, the machine was so nearly completed as to leave no doubt of its success.

Mrs. Greene was eager to communicate to her numerous friends the knowledge of this important invention, peculiarly important at that time, because then the market was glutted with all those articles which were suited to the climate and soil of Georgia, and nothing could be found to give occupation to the negroes and support to the white inhabitants. This opened suddenly to the planters boundless resources of wealth, and rendered the occupations of the slaves less unhealthy and laborious than they had been before.

Mrs. Greene, therefore, invited to her house gentlemen from different parts of the State, and on the first day after they had assembled, she conducted them to a temporary building, which had been erected for the machine, and they saw with astonishment and delight, that more cotton could be separated from the seed in one day, by the labor of a single hand, than could be done in the usual manner in the space of many months.

Mr. Whitney might now have indulged in bright reveries of fortune and of fame; but we shall have various opportunities of seeing that he tempered his inventive genius with an unusual share of the calm, considerate qualities of the financier. Although urged by his friends to secure a patent, and devote himself to the manufacture and introduction of his machines, he coolly replied, that

on account of the great expense and trouble which always attend the introduction of a new invention, and the difficulty of enforcing a law in favor of patentees, in opposition to the individual interests of so large a number of persons as would be concerned in the culture of this article, it was with great reluctance that he should consent to relinquish the hopes of a lucrative profession, for which he had been destined, with an expectation of indemnity either from the justice or the gratitude of his countrymen, even should the invention answer the most sanguine anticipations of his friends.

The individual who contributed most to incite him to persevere in the undertaking, was *Phineas Miller, Esq.* Mr. Miller was a native of Connecticut, and a graduate of Yale College. Like Mr. Whitney, soon after he had completed his education at college, he came to Georgia as a private teacher, in the family of Gen. Greene; and after the decease of the General, he became the husband of Mrs. Greene. He had qualified himself for the profession of law, and was a gentleman of cultivated mind and superior talents; but he was of an ardent temperament, and therefore well fitted to enter with zeal into the views which the genius of his friend had laid open to him. He had also considerable funds at command, and proposed to Mr. Whitney to become his joint adventurer, and to be at the whole expense of maturing the invention until it should be patented. If the machine should succeed in its intended operation, the parties agreed, under legal formalities, "that the profits and advantages arising therefrom, as well as all privileges and emoluments to be derived from patenting, making, vending, and working the same, should be mutually and equally shared between them." This instrument bears date May 27, 1793, and immediately afterward they commenced business under the firm of *Miller & Whitney*.

An invention so important to the agricultural interest, (and, as has proved, to every department of human industry,) could not long remain a secret. The knowledge of it soon spread through the State, and so great was the excitement on the subject, that multitudes of persons came from all quarters of the State to see the machine; but it was not deemed safe to gratify their curiosity until the patent-right had been secured. But so determined were some of the populace to possess this treasure, that neither law nor justice could restrain them: they broke open the building by night and carried off the machine. In this way the public became possessed of the invention; and before Mr. Whitney could complete his model and secure his patent, a number of machines were in successful operation, constructed with some slight deviation from the original, with the hope of evading the penalty for violating the patent-right.

As soon as the copartnership of Miller & Whitney was formed, Mr. Whitney repaired to Connecticut, where, as far as possible, he was to perfect the machine, obtain a patent, and manufacture and ship for Georgia such a number of machines as would supply the demand.

Such is the history of one of the most important on the list of human inventions, taken, in great part, from a Memoir which traces to its close the useful and instructive life of a man as distinguished and admirable for his uprightness and fortitude under some of the severest trials to which human nature can be subjected, as for the beneficent tendency of his genius. The narrative to which we refer relates interesting particulars of Whitney's connection with the Government as the inventor of important improvements in the manufacture of fire-arms, in which he continued through life to be employed. But of all employments, that is the least congenial with the great national concern to which this

Journal is exclusively dedicated, and one which by every wise and provident Government should be fostered first, and above all others.

But for Whitney's invention of the cotton-gin, Arkwright's spinning jenny, and other improvements in cotton manufacturing machinery, as well as the whole cotton region of our Union would have been comparatively uncalled for and valueless. This ingenious but unfortunate artist, says SEABROOK, in his comprehensive and classical Essay on Cotton, by his machine doubled the wealth and employment of his countrymen: while Judge WILLIAM JOHNSON, of South Carolina, in deciding one of the numberless suits which Whitney was compelled, with infinite cost and vexation to institute for violation of his patent, declared: "If we should assert that the benefits of this invention exceed \$100,000,000, we can prove the assertion by correct calculation." But painful and mortifying would be the task, even if we had room, of enumerating here the piracies and persecutions he encountered. Instead of proving, as such an invention would have done, under any despotism of the Old World, a source of unbounded wealth, and title to enduring honors at the hands of the people and the Government; it seems, by the fuller narrative before us, to have brought down upon him a series of difficulties, and even of derogatory and groundless suspicions and charges, which remind the reader of the heart-sickening train of calamities that stuck, like the poisoned shirt of Nessus, to the unfortunate discoverer of the philosopher's stone, as related in the celebrated romance of St. Leon.

So numerous, so protracted, so expensive and harassing, were these suits for violations of his rights, violations that, especially in Georgia, found too much encouragement in the selfishness of a community that should have promptly lent him their sympathy and support, that Hon. S. M. HOPKINS, a gentleman of much experience in the profession of the law, who was well acquainted with Mr. Whitney's affairs in the South, and sometimes acted as his legal adviser, observes, in a letter, that in all his experience in the thorny profession of the law, he had never seen such a case of perseverance, under such persecution, "nor," he adds, "do I believe that I ever knew any other man who would have met them with equal coolness and firmness, or who would finally have obtained even the partial success which he did. He always called on me in New-York on his way South, when going to attend his endless trials, and to meet the mischievous contrivances of men who seemed inexhaustible in their resources of evil. Even now, after thirty years, my head aches to recollect his narratives of new trials, fresh disappointments and accumulated wrongs."

But our limits admonish us to turn from the story of these accumulated wrongs to a useful citizen, which stand out in bolder relief for having been perpetrated under a Government which is said emphatically to be founded on public virtue.

A Summary of the State of Cotton Husbandry immediately before, as contrasted with its progress immediately after, and ever since the invention of the Cotton-Gin, will follow this Memoir. It discloses a development of industrial resources for which we should search in vain for a parallel in the agricultural annals of any nation on the globe: and never did chick issue from the egg more obviously than this wonderful expansion of American industry from the effect of an invention in suitable reward for which, ELI WHITNEY, instead of a contemptible patent, should have received a million of dollars, along with the benedictions of his country. How different the treatment of CORDEN by the friends of free trade!—a donation already amounting to \$750,000! When Whitney in-

vented the cotton-gin, in 1793, the whole cotton crop of the United States was 5,000,000 pounds, and the total exportation 487,600 pounds. In 1845, the U. S. cotton crop was 1,029,850,000 pounds; the exportation \$62,580,000 pounds, the domestic consumption being 167,270,000 pounds. And this development, which began to show itself instantly, all must admit to be the fruit of that invention. Now by what rule shall we measure the value of such a benefaction to the country, and how should it be rewarded? Shall we take a lesson from the colonial policy of an old, ill governed monarchy? There the Royal Board for the encouragement of Agriculture on the Island of Cuba, have offered

"One thousand dollars to the person who, during the month of December, 1845, shall soonest prepare and put into the most perfect state of tillage, one caballeria of land, with the improved American plow, worked by mules, and managed by whites." One thousand dollars to the person who shall, on the first of December, 1846, show two caballerias of land well stocked with red clover of six months' growth. Twenty thousand dollars, in annual installments of \$2,000, to the first person who, during the years 1845, '46, and '47, shall set up or establish a sugar estate or plantation, in which the cultivation of the cane shall be performed by thirty white families, consisting of a married couple each at least. One thousand dollars for the introduction of the bean used in the sugar estates of New-Orleans, as an article of food. Four thousand dollars to the person who shall show on the first of December, 1848, an artificial plantation of trees, of three years' growth. Six thousand dollars to the person who shall introduce from the East Indies 200 thriving and luxuriant stocks of sugar canes, &c. Twelve thousand dollars, in annual install-

ments of \$2,000, to the person or persons who shall set up, during the years 1845 and '46, a permanent establishment for the improvement of the breed of horses—four stallions, viz.: one of each of the following breeds, to be kept for public service, at prices to be fixed by the owner—one Andalusian, one Arab, one Norman, and one English—each to be of the genuine breed, of good form, size, &c. Six thousand dollars, in annual installments of \$1,000, to the person who shall import direct from England one bull and six cows of the finest and most reputed breed of that country. Two thousand dollars to the person who, on the first of December, 1846, shall show a herd of the 'largest sized swine,' introduced from the United States of America, or any other country. One thousand hard dollars to the person who shall, on the first of December, 1846, 'present or produce a breed of the largest domestic or barn-door fowls, (gallinas,) hatched or born on the Island, of a breed introduced from the United States of America, or any other country.'"

What, may it not be asked, has this enlightened Republic, and all the States and Societies in the Union done, in comparison with those munificent offers by this Royal Board "*for the encouragement of Agriculture*" in the Island of Cuba? Suppose the Government which every year derives so many millions of dollars on goods paid for with cotton, should have secured for the inventor of the gin even *one cent a bale*, to which none would have objected, the revenue to his family would now be \$20,000 a year. Under the most absolute monarchies of Europe, men of genius who make discoveries in natural and practical philosophy, and by their genius confer great benefit on the industrial pursuits of the people have been enriched by Government patronage and raised to the highest political rank. Alas! for American character and the cause of American Agriculture, how different the treatment and the fate of the English barber's boy and the American farmer's son! The inventor of the spinning jenny, Sir RICHARD ARKWRIGHT, died with a fortune of \$2,500,000! Is it, then, that our "government of the people" is to imitate them only or most nearly in their bestowment of education, and liberal pay, and high rank, and life commissions, and pensions, on that arm of power which despots maintain to stay the progress of free principles? Truly, the fate of Fitch, and of Rumsey, and of Clinton, and Whitney, and a host of inventors and men whose talents and virtues have improved and adorned the civil service and pursuits of our country, would seem but too justly to warrant the painful inquiry!

In the final illness and death of this great benefactor of Agriculture, he displayed the unshaken fortitude and strength of mind which seem never to have forsaken him. He has, we believe, left but one son who inherits his name and his virtues, but of his mechanical genius, of that, as of a genius for poetry, it may perhaps be said, *noscitur non fit*.

Through long and severe bodily affliction and partial repose, he reached the 12th of November, 1824, at which period we are told his sufferings became almost unintermitted until the 8th January, 1845, when he expired—retaining his consciousness to the last, closing his own eyes, and making an effort to close his mouth. It was his particular request that there should be no examination of the body to ascertain the nature of his disease, and he desired his funeral to be conducted with as little parade as possible.

A single inquiry for reflecting agriculturists, and those who nominally represent them: If any man should invent an engine of war, which in fields of battle should accomplish results as far beyond anything achieved by other nations and other times as Whitney's invention excelled all that had been done for a great field of national industry and wealth, what would be his reward? Does not the answer which every one must make to this inquiry, prove that there must be "something rotten in the state of Denmark"—something unsound in the public morals, which in all countries are greatly influenced by the spirit of the laws?

APPENDIX TO THE MEMOIR OF WHITNEY.

The Effect of his Cotton-Gin on the Cotton Husbandry of the United States.

In 1793, the year of the invention, the whole cotton crop of the United States was 5,000,000 lbs., and the total *exportation* 487,600 lbs. In 1793, when the cotton-gin was first extensively introduced into Georgia and South Carolina (then the principal region of that production), the whole crop increased to 8,000,000 lbs., and the exportation to 1,601,760 lbs. In 1800, when the machine had been thrown open to the people, without limitation, from regard to the legal rights of the patentee, the total production of cotton in the United States during the year amounted to 35,000,000 lbs., of which 17,789,803 lbs. were exported. In 1805, the whole production was 70,000,000 lbs., and the amount of *upland* cotton exported 29,602,428 lbs.—(value, \$9,445,000.) In 1810, the crop was increased to 85,000,000 lbs., and the exportation of *upland* cotton to 81,657,331 lbs. In 1815, the whole of the United States crop was 100,000,000 lbs., and the exportation of *upland* cotton 74,548,796 lbs. In 1820, the whole United States crop was 160,000,000 lbs.; the exportation of *upland* 116,291,137 lbs., valued at \$22,308,667. In 1825, crop 255,000,000 lbs., exportation of *upland* 166,784,629 lbs. In 1830, crop 350,000,000, exportation 290,311,937. In 1835, crop 475,000,000, exportation 379,000,000. In 1840, crop 830,000,000, exportation valued at \$63,870,307. In 1845, the United States cotton crop was 1,029,850,000 lbs., and the exportation of cotton 862,530,000 lbs.; the domestic consumption being 167,270,000 lbs.

The recent annexation of the immense cotton-lands of Texas, the abolition of the import duty on American cotton in Great Britain, and the vast and rapid increase of the manufacture of cotton fabrics in all parts of the United States, are evidences of the certainty of a farther increase in the production of cotton in this country. Enormous as has been the progress of this staple, from 1791 to 1845, it is destined to a yet greater extension in amount and value.

The exclusion of East India cotton from its previous monopoly of the markets of the civilized world, from the beginning of the present century, was mainly due to the introduction of the cotton-gin in the Southern States of the American Union, which substituted the rapid operations of machinery for the tedious and costly labor of human hands in the preparation of the crop for the use of the manufacturer. The recent attempts of the British Government and the East India Company to restore the successful production of cotton in Hindostan have consisted largely in the introduction of American improvements, especially of "THE AMERICAN COTTON-GIN," into those provinces which are adapted to the culture. The greater cheapness of labor, and even the superior quality of the product (in the province of Dharwar), were found to avail nothing, without the advantages of American machinery.

The pecuniary advantage of this invention to the United States is by no means fully presented by an exhibition of the value of the

exports of cotton (amounting to more than \$1,400,000,000 in the last forty-three years), nor by the immense proportion of the means which it has furnished this country to meet the enormous debts continually incurred for imports from Britain and the European continent—cotton having for many years constituted 1-2, 3-5, or 7-10 of the value of the exports of the Union. But it was the introduction of the cotton-gin which first gave a high value and permanent market to the public lands in the South-West. The rapid settlement and improvement of almost the entire States of Alabama, Mississippi, Louisiana, Florida, and Texas, is mainly due to the enlarged production of cotton consequent upon the invention of Whitney. The States of Georgia and Tennessee have also been largely benefited by the same means in the disposal of their domain, a vast portion of which must have remained unoccupied and valueless but for the immense increase of facilities for the preparation of cotton for the market. In the three States of Alabama, Mississippi and Louisiana, the sales of the public lands of the General Government amounted to 13,099,505 acres, during the eleven years ending on the 30th of June, 1811—yielding to the National Treasury more than \$30,000,000. The sales of upland cotton lands by the United States land-offices have amounted to many tens of millions of acres; and none have been sold at a lower rate than \$1 25 an acre—a large proportion at a higher rate.

It is to be remarked, finally, that the cotton-gins now in use throughout the whole South are truly the original invention of Whitney—that no improvement or successful vari-

ation of the essential parts has yet been effected. The actual characteristics of the machine (the cylinder and brush), the sole real instruments by which the seed is removed and the cotton cleaned, *remain*, in cotton-gins of even the most recent manufacture, *precisely as Whitney left them*. The principle has not been altered since the first cotton-gin was put in motion by the inventor, though great improvements have been made in the application and direction of the moving forces, in the employment of steam-power, in the running-gear, and other incidentals. Every one of the various cotton-gins in use, under the names of different makers, contains the essentials of Whitney's patent, without material change or addition. The brush and the cylinder remain, like Fulton's paddle-wheel, unchanged in form and necessity, however vast the improvements in the machinery that causes the motion.

A more imposing result of mechanical ingenuity directed to the benefit of a whole nation, and, through it, of mankind, has not been recorded in the history of the human mind. Certainly there is no patriotic American who will not rejoice to accord to this eminently useful, though basely wronged inventor, the judgment so well expressed by Mr. Lanman—that "Whitney earned the credit of giving a spring to the Agriculture of the South, which has been continued, unimpaired, to this day—a credit that will endure while the cotton-plant whitens the plantations of the South with its snowy harvests, or the machinery of the cotton-factory clatters upon the waterfall!"

BARLEY.

THE FOUR-ROWED AND TWO-ROWED VARIETIES.

WE do not know when we have read a letter with more pleasure than the one which follows this—not more, as the reader may suppose, on account of the information it imparts, than the free, enlightened spirit which dictated it. Surely, such acts of courtesy, and readiness to impart the knowledge of practical experience, ought not to be so uncommon as to call for remark, although always to be received with becoming thankfulness. *But is not the fact so?* Those who have enjoyed the opportunity to judge must have perceived how lamentably difficult it is to get *farmers* to write down what they know. Many of them would sooner sit down and be mesmerized for a tooth-pulling, than to take pen in hand. Not so, as all must have perceived, with men of other professions—"business men," as they are called. Is it that farmers' minds, like their hands, become stiff and rusty? If so, let them accustom themselves to *read*—ay, to read even *THE FARMERS' LIBRARY*, if they can get nothing better. That will keep their minds in exercise. And let them write notes on what they see, and require their sons,

when they come home at night from school, to read every night a few pages; and let them accustom themselves to putting on paper notes of what may occur, in the way of commentary on what they read.

See, in this letter about barley, how one of the most distinguished brewers, even of the celebrated "POUGHKEEPSIE ALE," has been looking thoroughly into his business, even through the breweries of London; and how he can, at once and off-hand, tell more about the different kinds of barley than one farmer out of ten thousand? May not the reflecting farmer, even in this, read a lesson of instruction? Is there anything in this letter on the varieties and properties of barley that any young, enlightened agriculturist should be ignorant of? Mr. Vassar was among the many who, at the Poughkeepsie Show, did, indeed, *throw his house open to the stranger within the gates*. There Committees were in attendance to hunt for and take charge of gentlemen coming from distant States to observe the products of the land, and in doing so could not be expected to shut their eyes to the *habits and ways of the people*. Every gentleman's house was the house of every gentleman.

The information here given was sought from Mr. Vassar with a view to append it, more particularly for the benefit of inquiring friends in Maryland, to the clear and satisfactory communication from Mr. Randall, which, we see, as we expected, has found its way into that safe, and sound, and well-wearing old repository of agricultural knowledge, the AMERICAN FARMER—into which, we doubt not, this will follow it, with or without these remarks.

POUGHKEEPSIE, N. Y., November 26, 1846.

Dear Sir: Your letter of the 19th ultimo came to hand in my absence, or it would have been replied to ere this. In answer to your questions, "Whether there is usually a difference in the price of four and two-rowed barley, and what that difference is, and on what founded? &c. &c." I reply, yes. The former is usually preferred by the trade on account of its superior malting properties, especially during the warm period of the malting season, requiring some three to five days less time to finish the process. It also yields more saccharine matter, pound for pound, compared with the two-rowed; the latter, possessing more gluten, germinates more slowly, and is therefore more difficult to convert into perfect malt.

The difference in price depends on their respective weights; the nearer the four approaches the weight of the two-rowed, the greater difference there is in price—and *vice versa*. When the former weighs 47 to 48 lbs. per bushel, and the latter 48 to 50 lbs., there are usually three to five cents in favor of the four-rowed, provided each grain is equally sound, &c.

It may be proper here to remark that the two-rowed barley in this State has greatly deteriorated within the last ten to fifteen years, chiefly through the negligence of the farmers in not selecting pure seed. The soil and climate, I am aware, have much to do in producing the necessary properties of good malting barley; but the inferiority of our two-rowed may be attributed chiefly to a mixture of several species of the same kind.

Large quantities of two-rowed were many years ago raised in the State of Rhode Island, and which was a heavy, coarse, dark and thick-skinned grain, very difficult to germinate. In the process of time it found its way into this State, and is traceable in all our two-rowed at the present day.

My father visited England in 1821, and brought over some twenty bushels of Norfolk barley (two-rowed). This was a short, plump kernel, thin skin, and very free to malt. In some sections of this State it is still discernible, but more or less mixed. The four-rowed is not so liable to deteriorate, as it matures or is ready to harvest several days earlier than the two-rowed. I believe there is no four-rowed raised in England; or, at least, none is used in brewing. The climate, being more cold and humid, is better adapted for the growth of the two-rowed; and we find in this country that this kind of barley does best on

high clay and gravelly soil, and a cool, moist season; while the four-rowed requires a warm, sandy loam, and is not so easily affected by drouth.

I was in England last year—visited most of the London breweries—saw their barleys and malts, and compared their samples with our own. Theirs was heavier and coarser grain, but an equal weight of ours would produce more saccharine matter than theirs.

The average price of barley at Albany this season may be stated at 55 cents for two rowed, and 58 cents for four-rowed. The proportion cultivated is about 33 per cent. of the latter. The total quantity brought to tide-water this season (I think) is about 1,300,000 bushels. I am not sufficiently conversant in the management of stock to inform you of the relative advantages of each kind of grain, but barley (in its raw state) has not been considered by our farmers very profitable feed for stock. With regard to malting it for that object, I have no doubt of its advantages, and only wonder our farmers have never tried the experiment. Barley, by the process of malting, increases 2 to 3 per cent. in bulk, and loses about one-fifth in weight.

I should be pleased to do all in my power to aid the circulation of THE FARMERS' LIBRARY, and in the meanwhile, I subscribe myself,

Your obedient servant,

WM. VASSAR.

Hon. JOHN S. SKINNER, New-York.

P. S.—The six-rowed barley is much of the same character as the four-rowed, but it has become proverbial to distinguish it by the name of the latter.

TRAP ROCK AS A MANURE.

EMPLOYMENT OF CHEMISTS.

UGHT not every State, or Agricultural Society or Institute, possessing the means, to employ a competent chemist, whose duty it should be to analyze such soils and substances as might be sent from different parts of the State for the benefit of its Agriculture? Could any more useful office be well established? And would it not have been done long since if farmers were not the most neglected and the most self-neglecting class of beings that go to make up the great social compact. In the November number of the English Farmer's Magazine, we find the following, and deem it worthy of a place. We have heard of turkeys being fattened, not only on English walnuts, given to them whole, which we believe, but on "brickbats," which we do not believe. We were not before aware that land might be fattened, and its crops increased, by pulverized *trap rock*. But the march of inquiry is bringing many strange things to light—called strange, as the Indian calls the ship that heaves, and the lightning that flashes, and the thunder that rolls on the stage—strange, because he is not *behind the curtain!*

Here we may introduce the suggestion of a late writer, that the chemist would do well to test the efficacy of different manures on fictitious soils, the composition of which he knows exactly; and he might make fictitious soils of silica, alumina, lime, &c., alone, or in any combination. Thus he would fix his data, and form for himself, so to speak, a zero, or starting-point, by which all his subsequent experiments on natural soils might be regulated. He would thus be enabled to speak with positive confidence, says this writer, on matters that are now but probable, and would reduce to system and regularity the whole theory of manures.

P. S. We believe Mr. Bogardus of New-York has invented a mill that "makes nothing" of grinding up stones, "trap rock," for instance.

Query. What would the Legislature of Maryland say, should the farmers of the State, constituting so large a portion of their constituents, call upon them to establish an office of Agricultural Chemistry and Geology, to be always open for their use and benefit? Yet, how better for the public interests could a small amount of *their* money be better employed? We trust, at least, that they will have no scruple in instructing their Representatives and Senators in calling upon Congress for money to establish a Normal School for the instruction of teachers in the sciences akin to and promotive of Agriculture; and we call respectfully on the Agricultural Societies and Clubs to put a Memorial to that effect in circulation. Let these memorials go to an Agricultural Committee; and, at all events, let us hear whether there is such an interest to be recognized in the proceedings of the States. In New-Jersey and in Virginia, in leading papers of great and deserved influence, we have noticed that a sort of foreshadowing has been thrown out of the prominent measures that would occupy the attention of their Legislatures this winter, and we remark with shame, but not surprise, there is no more allusion to anything to be done for Agriculture, except as it is concerned in some schemes of internal improvement, than if there really was no such thing to be cared for.

Agriculturists! you have been so long ridden by other interests that is it not time to pluck up courage, so far, at least, as to propose with them the game of "ride and tie?"

TRAP ROCK AS MANURE.

Sir: In my former letter I stated that I had used a quantity of what I termed marl, but which term ought to be a trap rock, containing felspar and hornblende. The constituents of trap are silica in a soluble or disintegrated state, available to plants, alumina, potash, soda, lime, magnesia, oxide of iron, and oxide of manganese; and this rock contains, in addition to the constituents of trap, eleven per cent. of carbon.

Any person wishing to see its effects as a manure on vegetation, may, at Cwinguamun Clyro, Radmorshire, see three fields under wheat, that were dressed with it last year—two of them with a ton per acre, and about six tons of dung, and one with two tons, which was very low in condition, and no dung. The result is, that the three fields will average from $4\frac{1}{2}$ to 5 qrs. of wheat per acre, which is an increase in favor of the manure of $1\frac{1}{2}$ to 2 qrs. per acre, as they never exceeded three before. In 1844, I dressed an acre of the poorest part of a field with a ton of the trap for turnips, and the remainder of the field with 25 loads per acre of dung for potatoes. I sowed Swedes on the part which had the trap rock, and the flies took the most of them off, and I then harrowed in others


which the flies also destroyed; there were some few of the first sowing that escaped both the fly and the harrow, which grew in that dry season to a large size. I sowed wheat after the potatoes at Michaelmas, and the turnips were gathered off in the spring and the ground sown with wheat. This year, without any other manure, I sowed the whole field with wheat in March, to see what proportion the one ton of trap would have to the twenty-five of dung, and the difference is in favor of the trap rock. In the second crop I have dressed three meadows with it, and the increase in crop is more than a third, as well as a better and more nutritious herbage.

Any person wishing for information respecting trap rock as a manure, if he will look at Professor Johnston's Elements of Agricultural Chemistry and Geology, will see it stated by him that it contains every nutriment vegetation requires. If it was pulverized to a fine powder, five cwt. per acre would be sufficient.

I wish to have it viewed by agriculturists, that they may see its effects on vegetation, corn, and grass, before I offer it for sale.

JOHN W. LLOYD.

Hay, July 20.

 THE MEMORIAL in behalf of the Plow, published in the last number of THE FARMERS' LIBRARY, is receiving warm support in Delaware. Surely there will be friends enough of the cause in all the States to force it on the attention of their Legislatures, and to extort from Committees some indication of what is to be expected for Agriculture while the public means are so lavishly bestowed on other concerns.

A BREAKFAST-TABLE CONVERSATION,

Between the Editor of The Farmers' Library, and a hard-working, practical Northern Farmer. About what? Read and you shall know.

THE fashion prevails lately in England, to a certain extent, to substitute public *breakfasts* for dinners at great meetings and fairs of Agricultural Associations.—These occasions give rise to public discussions, more or less extended; but, for our part, we have never been able to discover that much information could be imparted or acquired where people come together to see, rather than to talk or to listen—where, in fact, everything is calculated to divert and distract, rather than to compose the senses and instruct the mind. Hence we have often found that there was more information to be obtained in half an hour's horseback or fireside conversation, with such a man as friend JONES, of Delaware, or with Mr. CRAWFORD, superintendent of Dr. Stewart's Doden estate (a Napoleon in his way), or even with an experienced negro manager on a large plantation in the South, such as Col. Hampton's man LYMUS, than is to be gathered in the confused scene of an annual public fair or exhibition, by the conversations or discussions to which they give rise, such as they are. To see half that is to be seen, and to exchange salutations with the hundreds you meet, is as much or more than can be done with satisfaction. That, then, is a false view of the advantages of such annual fairs, which refers them to the benefits to be derived from oral interchange of knowledge.

In excursions about the country, and sojournings at watering places, last summer, for health and observation, pastimes among the most agreeable were found in occasional visits, unceremonious and without any formal introduction, but none the less respectful on our part, to *plain, practical farmers*, in the midst of their family circle, or their field labors, as it might happen—to such farmers as had won, throughout their bailiwicks at least, the humble but honest renown of being industrious, frugal, thriving managers of their own little estates; and who, by skill and diligence, had gotten to be what is expressively termed, “well to live in the world.” And how much more to be coveted and enjoyed, the unpretending fame and livelihoods thus acquired, than the much bruited renown and overgrown fortune of the millionaire, gotten (as the professed gambler makes his by the turn of a card) by dashing, hit-or-miss speculations in trade—which may, perchance, elevate their projector to the giddy and dangerous height of sudden affluence, or which may plunge himself and family into irretrievable bankruptcy, dragging down with him, as most frequently happens, his and their most reliable and confiding friends, into one abyss of common ruin.

How still more enviable is the humble estate and condition of such a farmer, than the ill-gotten wealth amassed by the surer and more cautious schemings of the wily shaver, who, gloating over the embarrassed fortunes of his neighbor and friend, generously grants him one pecuniary favor after another, at the rate of *cent. per cent.*, until, having gripped his last dollar, he leaves him in helpless and hopeless despair, to fall into the gulf of ruin to which he had *kindly assisted to conduct him!*

In such "middling" farmers, so thrifty and so independent, no country in the world abounds as does New-England. The best systems, however, may be carried to extremes; and, truth to tell, there are defects in the domestic arrangements and economy of these farmers in the "Free States," which the cause of truth, and the duty of impartial inquirers after it, require to be noticed, and to which we now can only incidentally refer—intending, if not presently, on some future occasion, to speak of them more at length and more explicitly. Suffice it here to say that, in their eagerness to accumulate, and to make everything tell as much, or more, by saving than by making, labors too onerous, and cares too multiplied, *are thrown upon the good housewife*; while the children are stinted in their education from the time that the value of their labor in the field can be counted with precision.

Well are we aware how we expose ourselves to resentful animadversions for what is here hazarded, without meaning any particular application, much less to the case in hand. We know that such a charge should be followed at once by specification, and sustained by argument, lest a wound, that might now be assuaged, be left to fester in proud and jealous minds; but, leaving ourselves for the present in the hands of the skillful and accomplished Physician of the Hartford (Ct.) Infirmary or "Retreat" for the Insane, so renowned for its excellent management, we must proceed to our already long-neglected purpose of giving some account of a breakfast-table conversation, in September last, with Mr. B. A. HALL, whose farm and residence are in that beautiful valley which is overlooked from the southern piazza of the principal hotel at Lebanon Springs—as it is, indeed, from any one of the hundred eminences which there command a view of some thousand acres (including the Shaker village), all checkered with numerous well-cultivated little farms, and limited by a serrated line of well-defined mountain scenery—the whole scene reminding one of the famous "valley of Abyssinia."

Mr. Hall's farm consists of 200 acres of land—20 in wood, and 180 arable. Of these, about 50 are kept constantly under the plow—the residue being in grass. His staples are *butter* and *pork*. Of the former he sells about 4,000 pounds a year, and of the latter some 15,000 pounds.

Those of our patrons who take this journal for the sake of *reading* it, as we would fain persuade ourselves all of them do, may remember that, with the aid of a certain Mr. NEMO, an account has been given of a visit made by the Editor of The Farmers' Library, last summer, in company with Col. F. W. Pickens, of South Carolina, to Col. Chapman, the President of an Agricultural Society, near Saratoga Springs. By the aid of that same good and ever present friend Nemo, will we endeavor now to relate what was learned on this occasion of Mr. HALL, as to the management of his farm of 200 acres. The sketch must, however, be quite imperfect, and can only assume the ill-arranged form of the skeleton of notes and remembrances of an unstudied catechism on the one side, and off-hand responses on the other. But, even such as it is, it may prove to have some interest, especially for our friends in the South, who are wont to ask, "How *do* these northern people contrive to hire their force—to rear and educate their families, keep out of debt, and even lay up something out of their wee-wee farms at the end of the year?" Well, to proceed:

Having heard the common rumor of Mr. Hall's well-conducted dairy establishment and piggery, and that he was going ahead and *improving his land at the same time*, riding by one afternoon at twilight, we halted, "hitched" our horse

(a most miserable, flat-footed, down-headed beast), and going directly to the cow-pen, very near his house, met Mr. H. with his pail in hand, just about to join his men, and take his own station to pull away at the well-filled udder of a well-fed cow. Here, methinks, I can almost hear the southern reader, sitting probably at that very moment in his piazza, whiffing his fragrant Havana, while his careless colored women were half-milking some twenty cows a mile off, without supervision or responsibility—we almost fancy we can hear him exclaim, “*That’s enough, sir—you need not proceed.*” Where one reason is all-sufficient, the rest may be omitted. If *the man milks his own cows, I give it up!* for, with such a root, any tree must flourish!” But let us get along with our sketch.

Mr. Hall, laying aside his milk-pail, insisted that we should go into his house and take a seat, that being deemed a *sine qua non* toward getting acquainted, and discharging, on his own part, the duties of hospitality. In exterior his dwelling was as unpretending as dwelling could well be—like Col. C.’s, at Saratoga; but like his, too, inside all cleanliness and comfort. By the by, who can avoid—for the life of us we never could—on entering a dwelling, the true province and dominion of the good huswife, from slyly casting around to see how things look in *her department*—whether the windows are washed, paint scoured, hearth cleanly swept up, cupboard neatly arranged, mantle and chairs and chair-boards dusted, cobwebs not a speck to be seen—all, all “set in order,” and neat and clean “as a handbox”? But, gentle ladies, even all that, let us warn you, does not satisfy the judgment of men who, while they may closely scrutinize your housewifery, entertain, as we profess to do, the highest possible respect for the important, the noble station which Providence has assigned you in the eyes of all men of sense, and which honor and duty alike enjoin upon you to *fulfill*, with care and with pride, whatever, whether high or low, may be your rank or fortune; but, if possible, with more obligatory force and necessity in the country than elsewhere.

Too well are all men of observation aware that all is not gold that glitters—the fairest looking apple is sometimes rotten at the core. The hall, the parlor, the show-rooms, and all apartments in common view, may indicate *minute* attention and good taste on the part of the mistress, whose *eye* is best of all brushes; and yet, as it sometimes happens, the chambers of such a house may be the receptacles of filth—the cellars the convenient repository of every offal—the kitchen the scene of waste, and lounge of every idle loafer about the place—the dairy be poisoned with the bad odors of superfluous moisture and half-secured utensils. We have seen such establishments with disgust: but much more doth it rejoice us to say that we *have* known and enjoyed establishments (when we had one to enjoy) where “the lady of the house,” like the truly brave soldier who, when roused at midnight, springs at once to his arms, ready to do battle—so can such a woman, in proud defiance of the strictest scrutiny, take husband or stranger by the light of the lamp or the light of the sun, by day or by night, from the garret to the cellar—open every closet and every drawer—and demand, “Where do you find, in *my* department, a pin or a feather out of place, a mickle of waste, or a garment without a button?” But, to achieve all this, she should have all *needful* help. Such only is the woman who deserves the name of a good housewife; but he who possesses her possesses a treasure of inestimable value, and bad indeed must be his own management if, with her thrift and her example and encouragement, he fail to thrive. “*She looketh well to the ways of her household, and eateth not the bread of idleness.*”

But to return once more to Mr. Hall and his management. Being at the time of this first call "belated," and yet wishing not to indulge an idle and impertinent curiosity, but catering with honest intent for that which is our chief care—information or amusement for our readers—we excused ourselves from staying for supper, saying to the good lady of the house that, if she could promise a glass of fresh buttermilk, we would ask the favor to have a seat at her breakfast-table the next morning. The promise was graciously made, the hour announced, and so we departed.

True to our engagement (and not forgetful of the buttermilk), the next morning found us seated at the table—and with whom, does the reader suppose?—Mr. HALL and his wife and children, with servants in attendance to fetch and carry, and laborers eating or waiting in an out-house? Not at all. There were the husband, the wife, and several laboring young men, who had milked the cows, and were busy with other work until after breakfast, when they should all, with the boss in the lead, repair to the fields for the regular labors of the day. A most substantial breakfast, too good for tyrant kings and no less tyrannical demagogues, had been all at once placed before us, to be partaken of at once and equally by every one whose labor contributed to the products of the farm. The "help" in attendance consisted of one young woman, who had assisted to cook what she served up. The laboring young men were in their working-clothes, and their deportment marked by that discretion and good temper, and their appearance indicating a degree of physical energy, which were all calculated to insure harmony in the social circle, and success to the labors of the farm. Of what that labor produces, and the system on which it is conducted, we have now to speak—not, as before stated, systematically, but as the facts came to light in the course of unstudied inquiry and impromptu answers.

About one-half of the 50 acres kept under the plow is in "hoed crops," chiefly corn, pumpkins and potatoes. For these his practice is to plow his land in autumn and spring, according as he can get time; but, to an inquiry on that point, he answered that he was of opinion that the nearer the plowing should be to the planting time, the better. The relative advantage of fall and spring plowing presents to the inquiring agriculturist, it may here be remarked, an interesting question. Much in this case depends, no doubt, on the previous crop and condition of the land, and on the *climate*. But we must avoid farther episodes.—Mr. H. plants his corn only three feet each way, and six or seven grains in a hill, counting on five or six to "stand," and, if the land is rich, to average an ear for each stalk. In this may be found one of the mysteries how it is that such heavy crops of Indian corn, from 80 to 100 bushels—premium crops—are gathered from land in this northern climate, considered to be comparatively uncongenial to the constitution of that noble plant. Hills at 3 feet apart give 4,840 to the acre, and 5 ears to the hill give 24,200 ears. The reason that it bears to be thus thickly planted is, that it does not grow to more than half the height of southern corn. Nature seems to have provided for the drier climate of the South a plant with more leaf to imbibe the dew and rain, and, if planted as thick as at the North, it would not produce half a crop. The pollen could not fall upon the silk to impregnate the ear. The much vaunted "*Dutton corn*" proved a failure in the South. Behold *another digression!*

If it be sward land, designed for corn, Mr. H. *plows* it but once. The sward is inverted, and the top of it so inverted left undisturbed through the season; while the soil which, by inversion, is brought to the top, is afterward worked

exclusively with harrow and cultivator. These implements, by the by, have become so common that, like old, familiar friends, we rarely reflect on their labor-saving and excellent qualities. Let those who would calculate them turn to the table in the MONTHLY JOURNAL OF AGRICULTURE, page 177 of the current volume. His manure is all composted, and carried into the fields, but not spread or used before the land is turned up with the plow. It is there put in heaps, where it is turned two or three times, and soon ferments and becomes mellow. His compost is made in the barn-yard only when intended for use near at hand. After the land is plowed for its crops, the manure is spread broadcast, 20 to 25 loads of half-cord—that is, 4 feet long, 4 feet deep, and 4 feet wide, to the load—equal in fertilizing power, probably, to 100 loads of ordinary coarse manure, from barn-yards where cattle are fed entirely on *straw* and “*shucks*,” and the manure exposed to all weathers. *Stick a pin there, good reader!*

☞ *Again:* He then “cultivates” or harrows the land two or three times, before planting, until the land is in fine tilth and the manure thoroughly inter-mixed! Then he “lays it off” with a *labor-saving* marker, that will mark three rows at a time. This marker “any smart man will make in two hours with cultivator teeth.” He wishes never to disturb the underlying sod, which is going on rotting, and as it rots affording nourishment to the crops above it. Twice going over with the cultivator each way, making four times, he finds sufficient for corn. But the reader will do well to bear in mind the ends in view, the staples—as he goes along, to wit: *Hogs and Cows* to be fed through the summer—the former being always “kept up,” except when sometimes turned into the pea-field. Oats and barley are sown sometimes separately, but frequently as a mixed crop. Sometimes peas—a “June pea” resembling, but smaller than the Marrowfat. Sometimes the hogs are turned into the pea-field.

Instead of peas in Kentucky they sow fields of rye for hogs, which are turned in when, perhaps, not dead-ripe; and the grain which finds its way and is left in the ground, makes fine fall pasture for mules and cattle. This we have supposed might be done with profit on the southern Atlantic board. But the peas are most usually cut and fed to the hogs in the pen. When barley and oats are sowed together, which are found to do well, or either separately, the measure is three bushels of seed to the acre, and with them, or rather on them, clover and timothy. Of these grains (barley and oats), mixed or alone, his usual crop is 40 bushels to the acre, which he considers a good fair crop, though he frequently gets 50 and 60—sometimes 50 of barley, but esteems 30 to 35 to be a fair yield. These grains are ground together, and mixed with vegetables; so are all sorts of grain—corn, rye, buckwheat; and all are the better for being cooked, especially when used with vegetables, which generally consist of pumpkins and potatoes—usually the latter, though these have been difficult to raise the last four or five years.

He sometimes feeds his hogs on apples, but does not value them highly. He depends much on cutting clover for his hogs; yet you shall hear many who have abundance of clover wonder what men can do for want of food, other than grain, for hogs that are kept up in summer time.

Mr. Hall killed last year 75 hogs, that weighed 15,000 pounds, and got for them 5½ cents per pound. He keeps an average number of about 22 cows through the year, and sells about two tons of butter, 2,600 pounds to the ton, at an average of 20 cents a pound. He has this year sent about 1,000 pigs to the

Boston market, by railroad, from a depot of which, at Canaan Center, he lives some 7 or 8 miles. *These* pigs averaged about 45 pounds at two months old, and brought 9 cents a pound. They are fed "on the sow" and on sour milk and meal. They begin to eat at four weeks old, when he gives them "something they like." Without entering upon philosophical disquisitions about the matter, Mr. Hall sententiously remarked that the proper business of a hog's life was "*to do nothing but to eat and sleep.*"

His hogs not unfrequently reach 600 weight at 18 months old. He showed eight pigs of one litter that, when killed, at about 14 months, will, he judges—we think within the mark—average 300 each. He makes it a point in cold weather to keep his hogs *clean and dry*—a *dry bed* and *clean straw* are the *sine qua non* with him. How unlike two hogs we saw, late in November, not many miles from Washington, in a small pen, from which there was no escape for the very liquid mud and water, several inches deep, in which they were standing all day, and lying down only when they could stand no longer, without a particle of litter of any kind, or any precaution to save a particle of their manure; and this in full view every day. Though one swallow may not prove the access of summer weather, yet one sight like that would convince the most partial judge that the farmer who could sleep in his bed, with hogs left to sleep in such a bed as that, had altogether mistaken his calling. It would be as impossible to make a thriving farmer out of such an one, as to make great and wise rulers out of demagogues.

Mr. HALL looks to pumpkins as quite an important item in his resources for both cows and hogs. His pumpkins are planted among corn, thick as that is planted, and he gets from an acre about 20 loads of the common field pumpkin. These he finds quite susceptible of frost, and are best kept in a shed covered with straw, and not in cellars. It is important to keep them dry. As they are liable to be destroyed by frost, good economy dictates that they be fed early in the season, both raw and cooked; when raw, they are cut in half for the cows, and "they will manage them." His cardinal rule is to sell neither grain or straw off his place, but, turning all into manure, he keeps his farm, as every man does *whose foundation is not giving way, always in a state of progressive improvement*, be that never so little. Another great reliance with him for manure is on *muck*, of which there is a constant supply within a few feet of the back of his piggery. That is kept well supplied with muck generally, but most especially when his hogs are fed with vegetables, and when, therefore, their voidings turn the muck to most account.

We were not a little surprised to learn how long their meadows, even some on hill-sides, as at Col. Chapman's, near Saratoga, are kept unbroken, yielding good crops of grass. Mr. Hall showed a lot which had been under the scythe for more than fifty years.

This whole region enjoys the reputation of being very healthy. The water is good, the temperature delightful, the topography of the country such as to secure it against stagnation and malaria, and, above all, the people industrious and sober. Mr. Hall's father had moved here from Connecticut 65 years ago, and died last spring, at the age of 85. He showed a field of corn, which he seemed not to consider extraordinary, and from which he counted on 60 bushels of corn to the acre. With such management, and such appliances of manure—such fine tilth in the way of preparation, and such frequent and nice cultivation—what crops might not be grown on the river and creek bottoms of

Maryland, Virginia and North Carolina? Take, for proof, the following extract:

WASHINGTON, D. C.

"I have lately returned from my plantation in Charles County, Md. I have made some-where about 2,000 barrels of corn, nearly half 'housed,' of the best sound quality; and some of the land has been so much more productive than Maryland corn-lands have credit for, that I must make a statement, on the credit of my overseer, upon which I rely, that seems to me worthy of publication—as follows:

"Upon scant two acres of my land, by measurement, situated immediately adjacent to Nanjamoey Creek, under the management of JAMES K. NASH, the overseer, twenty-five barrels, or one hundred and twenty-five bushels, of good merchantable corn, by actual measurement, were raised the past season, and five bushels more of 'nubbins,' or short corn—thus making upward of sixty bushels to the acre. The corn had been planted $3\frac{1}{2}$ feet apart, 2 feet between the hills, and two stalks in a hill.

"The overseer (superadded to the favorable season for those who had planted early) ascribes his success to *deep plowing*. There had been no unusual application of manure.—The preceding year the same land had produced a fair quantity of tobacco, of good quality.

"Truly yours,

B. O. T."

It will be seen that, according to the above arrangement, there stood on the acre 12,444 stalks, while on Mr. Hall's there were 24,200. We think it probable, however, that on Mr. Tayloe's land each hill of two stalks yielded an average of 3 or 4 good ears. But the probability is that his was of the yellow or white gourd seed species, which would considerably overshell, ear for ear, the bright, hard, yellow flint corn, planted in the Northern States. So much for the overlooked, neglected, and much berated and belied lands of Maryland and Virginia, possessing advantages of cheap transportation, vicinity to market, and easiness to be worked, unequaled, when combined, to any in this Union. But some other occasion must be taken to amplify and verify this incidental point. For that purpose and to execute it more thoroughly, we propose, when we can get time, a personal survey. Let us proceed with our breakfast, and familiar categorical conversation over our pitcher of buttermilk.

Mr. Hall and his neighbors are getting, we were glad to learn, all alive to the vast importance of *under-draining* their lowlands. He cuts his drains about $2\frac{1}{2}$ feet deep, and fills in with about $1\frac{1}{2}$ feet of stone; then inverts the sward on the stone, and fills up with the dirt thrown from the drain. He doubts not that the lands in the valley generally will double their present crops when well under-drained, but we apprehend much will be imperfectly done in the beginning. Our memorandum is that he could get under-draining done, where the stone is at hand, for 50 cents a rod of $16\frac{1}{2}$ feet; but that seems almost too cheap to be correct—that is, if the drainer completes the work from beginning to end; though we feel confident that was the statement; and, upon reflection, a stout man—especially an Irish ditcher, with his amphibious, muskrat habits—might do good work at that, especially if found by his employer. We think it probable that $3\frac{1}{2}$ instead of $2\frac{1}{2}$ feet deep would be better, and even cheaper in the long run.

After laying down his fields to grass, succeeding his root crops, the heaviest crop is taken off the second year, but he counts on about $2\frac{1}{2}$ tons for the first three years. Hay being worth there about \$7 at the mow, this would give \$17 50 an acre, with none but the cost of cutting and curing. And, after all, the great difference between the North and South is, that in the North their crops are but a short time on hand—that is, their hoe crops, and their staples, hay, stock, butter and cheese, hops, wool, apples, and fruit and poultry, require comparatively little labor and short time to realize their value; whereas, in the South, the crops—rice, cotton, sugar and tobacco—are on hand from year's end to year's end. The harvest-home trenches on the seed-time: it's toil, toil, toil—trouble, trouble, trouble—all the year round. Instead of the northern farm

requiring superior skill and diligence, as many suppose, the reverse is the fact. The owner, who should always be the *head* manager of the southern plantation, should be able not only to teach the soldier how to go through the manual exercise, but he must have the skill and the firmness, the science and the tact, of the general, to combine and command. He has need to be a practical chemist and a manufacturer, as well as a practical planter. The public mind is in a fog on this subject. The management of a northern farm lies in a nutshell—a cow-bell may be heard from one side of it to the other. A southern cotton or rice or sugar plantation is a wide domain, and he who makes the most of it must know something of hydraulics, of civil engineering, of complicated machinery, of vegetable chemistry, and of physic and metaphysics in the bargain! But enough of this, too, for the present—let us back to our theme, or we shall never be done with this buttermilk breakfast.

We profess to hold in great contempt all mere statements of facts and results, without affording the means of applying them or of drawing some useful and practical conclusions—as premiums are given by Societies for big crops and fat hogs, without examination or means furnished for exactly understanding the *means to the end*. Of what avail to say, for example, that Mr. Hall makes a certain quantity of hay or corn on the acre, or a certain quantity of butter, or that he kills a certain amount of pork, without affording the means to *judge of the profits*, by showing the value of his investment in land, and of the food employed, and the marketable price of the commodities produced and for sale, &c.? So we proceed to state that, at the time referred to, hay was worth \$7 at his barn-door, corn about 50 cents, oats 33, barley 52—the last generally about 50, and Mr. H. thought it worth that for food for hogs. He thinks the relative value of corn, barley, and oats, as *food*, bears about the same proportion they do to each other in *weight*; the weight of corn being 56 to 60—which we suppose to be somewhat heavier than southern corn—barley 48, and oats 32. These are the standard weights. The real weight of oats is usually here from 30 to 32. Our impression is that mountain oats—Alleghany oats, for example—go up usually to 40 pounds to the bushel; “Eastern Shore” oats, 28. For various grains, in many States, there is no standard weight. Better would it be to sell everything, where it is possible, by *weight* than by *measure*; and better for the farmer, and the character of any market, that the standard of quality (flour, for instance) should always be kept *high*, and honestly preserved.

At Quebec, meats are nearly all sold by women, sitting in carts, in a square outside the market, and the purchaser pays, with confidence, according to *small gashes* cut in the grain of the meat—as thus, IX. for nine pounds. You turn over the pieces, into which the meat is all ready cut up, until you find one bearing as near as may be the mark of the weight you want: and, when you find these little gashes, you pay the old woman accordingly; and we were told that such a thing as cheaterly or deception was almost unheard of. Well, says the reader, this was a most unconscionable breakfast, to last so long.

Inasmuch, then, as we have yet to speak more particularly of his butter—its manufacture, sending to market, and sale; also, the facilities the railroad affords to agriculturists, so much beyond what is enjoyed in the South: also, of the formalities of sending to market and getting account sales, together with the price of lands in the neighborhood—we must here break off, and finish with some remarks on these topics in our next number, if not “crowded out.”

SHEEP HUSBANDRY IN THE SOUTH.

[THE series of letters of which the following are the beginning, from HENRY S. RANDALL, Esq., of Cortland Village, N. Y., to R. F. W. ALLSTON, Esq., of Waccamaw Beach, (near Georgetown, South Carolina,) will be continued; and will be found, when completed, to embrace a full Manual of Sheep Husbandry and Wool Growing for the Southern States, with a very fair and thorough investigation of all the facts which go to throw light on the feasibility and profitableness of those branches of industry in the region alluded to.

It was certainly not from any want of sheep books, nor of essays on Sheep Husbandry, within our reach, founded either on general inquiries into the subject, or on local and partial experience, that we urged on the writer the preparation of these letters. The good will of authors and publishers, and the liberality of the Publishers of THE FARMERS' LIBRARY keep us supplied with all works of any authority on this and other branches of agricultural industry. But in the midst of these abundant materials for general information, we have long desired to present something which, without interference with the rights and labors of others, might be confidently exhibited as the special fruit of careful investigation and actual experience on the part of some enlightened and practical sheep farmer. Here, accordingly, we offer the views of one, acquired under circumstances and with a power of discrimination that enable him to adapt his observations to the climate, wants and means of that very large portion of our country in which this important resource appears to have been too long overlooked and neglected.

It would be altogether superfluous to enlarge on the importance of adding to the staple products of any region one so considerable as is *Wool*, where Nature has provided the means of producing it.]

LETTER I.

EFFECT OF CLIMATE ON THE HEALTH AND WOOL-PRODUCING QUALITIES OF SHEEP.

Introductory Remarks...Wool-Growing and Manufacturing Statistics of the Southern States compared with those of New-York...Effect of Warm Climates on the Health of Sheep...Sheep in the Southern States below latitude 32°...Effect of Climate on Wool-Producing Qualities of Sheep—on the Quantity of the Wool...Weight of Fleeces in the Southern States indicated by U. S. Census of 1840—Important Omissions in that Census—Other important Errors in it...Table of Weights of Fleeces in Four Counties where they average highest in each of the Southern States and in New-York—Latitude, Topography and Climate of those Counties...Warmth of Climate conducive to the Production of Wool—Reasons.

R. F. W. ALLSTON, Esq—

Dear Sir: That spirit which prompts communities and States to attempt to render themselves independent, so far as the supply of physical wants is concerned, of other communities and States, is an eminently proper one, up to certain limits. Beyond these, it degenerates into mere sectional selfishness, as deserving of reprobation in the community as in the individual—nay, more so, for it militates more widely against the interests and happiness of mankind. Agriculture supplies the most of our physical wants which are not administered to spontaneously by Nature. In this great department of human labor, it is not difficult to decide how far the inhabitants of each particular region are called upon to rear from the earth what their wants require. Nature herself has, in the distribution of soils and climates, both indicated and limited the production of many of the agricultural staples, by geographical boundaries, sometimes topically

and sometimes by whole regions. This compels those practicing Agriculture, both as individuals and masses, to make that "division of labor" which, as in the mechanic arts, gives a better knowledge of its principles and a greater expertness in its practical manipulations. It also creates the necessity of exchange. Exchange is commerce, and commerce begets and diffuses civilization.

Agricultural production, then, should be controlled by the demand or want, and by the adaptation of the country to such production. It would be absurd, for example, for New-York to attempt to raise its own rice and cotton, instead of exchanging the surplus of what it can most readily produce for that rice and cotton, or selling its surplus where it is wanted, and buying the rice and cotton with the proceeds. But, on the other hand, it would be equally absurd for New-York to be dependent on South America or Australia for her wools, when she can raise that staple just as well as those countries, and thus save paying for transportation and the hire or commission of the agents of exchange.

Though Nature both indicates and limits the production of staples by soils and climates, she too rigidly enforces the primal curse, or perhaps we should say blessing, of labor, to bring forth each, indigenously, in the regions adapted to it, or ever to place them there, unless transported by the enterprise and industry of man. The potato and maize were a recent gift from this continent to the eastern. The debt has been repaid by rice, the sugar cane, the horse, the cow, the sheep, and a multitude of other plants and animals. How singular is the history of some of their deportations! The sugar cane, now furnishing an important staple in some of our own Southern States, originated in the eastern confines of Asia; was not vouchsafed to the Greek and Roman; traveled into Arabia about the last of the thirteenth century; passed thence into Africa; was carried by the Moors into Spain; by the Spaniards and Portuguese into the West India Islands; and thence we received it. Rice, the great staple of your own State, sir, a plant of which it has been said that it "has altered the face of the globe and the destiny of nations," originated also in Asia, and has traveled by the same slow stages, until it has reached that low zone which skirts our south-eastern shores, to render its vast marshes, otherwise useless, as profitably productive as the best grain or cotton lands of the Southern States.

Here, sir, we find an instructive lesson. Other regions there are in our Southern States, now, nearly as useless as would be her "hammocks" without rice, inviting the introduction of some other great staple to supply, if feasible, a home demand, and a surplus for profitable exportation. If this great object can be achieved, and by the same means, the husbandry of the regions now under cultivation be made to assume that mixed and convertible character which will both add to their present proceeds, and better sustain their fertility, for future demands on them, a benefit will be conferred on the South the present and final results of which it would be difficult to overestimate. Repudiating theoretic speculation and vague conjecture—advancing just so far and no farther than we find our way illumined by the broad and certain light of facts, let us inquire what important staple there is, not now extensively produced at the South, which would come within and at the same time fill the requirements I have mentioned.

Woolen fabrics constitute an important item in the imports of the Southern States, and for these they exchange the proceeds of no inconsiderable proportion of their industry with the Northern States and with Europe.

The following table will exhibit the population, and the amount of home

production in these staples, according to the U. S. census of 1840, in the States south of the Ohio and Potomac, and west of the Mississippi, (including Louisiana,) in 1839. To these are added, by way of comparison, the statistics of the State of New-York, under the same heads, for the same year:

TABLE No. 1.

| STATES. | Population. | No. of Sheep. | Lbs. of Wool. | No. of Woolen Factories. | Value of Woolen Manufactured Goods. |
|-------------------|-------------|---------------|---------------|--------------------------|-------------------------------------|
| Virginia | 1,339,797 | 1,293,772 | 2,538,374 | 41 | 147,792 |
| North Carolina .. | 753,419 | 508,279 | 625,044 | 3 | 3,900 |
| South Carolina .. | 594,398 | 232,981 | 299,170 | 2 | 1,000 |
| Georgia | 691,392 | 267,107 | 371,303 | 1 | 3,000 |
| Florida | 54,477 | 7,138 | 7,285 | | |
| Alabama | 599,756 | 163,243 | 229,353 | | |
| Mississippi | 375,651 | 128,367 | 175,196 | | |
| Louisiana | 352,411 | 98,072 | 49,383 | | |
| Tennessee | 829,210 | 741,593 | 1,060,332 | 26 | 14,000 |
| Kentucky | 779,825 | 1,008,240 | 1,786,847 | 40 | 151,246 |
| Total | 6,261,336 | 4,478,852 | 7,133,187 | 114 | 329,938 |
| New-York | 2,428,921 | 5,118,777 | 9,845,295 | 323 | 3,537,337 |

The above is only given to indicate approximate general results; for, as I shall subsequently show, the returns of the product of wool are inaccurate to the last degree.

The question now arises, whence the immense disparity in the growth and manufacturing of wool in the State of New-York, comprising 46,000 square miles of territory, and less than two and a half millions of population, and the ten States above enumerated, covering an area of 495,000 square miles, and exceeding six millions of population? Is the growing of wool, (for we will first consider this, as the main question, leaving the subject of manufacturing for subsequent examination,) to its present extent, profitable or unprofitable in the State of New-York? I contend, and shall attempt to prove, that taking a term of say ten or fifteen years, it has been the most profitable branch of industry carried on in the State. If this is true, why is it not equally profitable in the Southern States? Is there anything in their climate which renders them less favorable to the health or wool-producing qualities of the sheep—or is there anything in their topographical features, soils, herbage, or other circumstances, which unfits them for a natural and easy adaptation to sheep husbandry? Or have they other staples so much more profitable that it is not an object to grow wool?

Having bestowed some attention on these points, and having been practically familiar with the most minute details of sheep husbandry from my childhood, I have thought that the conclusions I have arrived at, and the facts on which I have based them, might not be uninteresting to you. To bring these facts connectedly before you, I shall necessarily be driven to repeat some matter from my own and the writings of others, which you have doubtless before seen in the publications of the day.

Let us now take up the first of the two preceding questions; and first I will call your attention to the effect of Climate.

Sheep have been bred, time out of mind, on the Eastern Continent, from the Equator to the 65th degree of north latitude, from the burning plains of Africa and Asia, to the almost perpetual frosts of Iceland. The Merino, (the different families of which, as will be shown, constitute the only varieties suitable for wool growing on a scale of any considerable extent,) has been bred in Europe, for ages, as far south as between the

* When I use the words "Southern States," without further specification, you will understand me to mean the ten enumerated in Table 1st.

36th and 37th parallels of latitude, and has, within the last few years, been acclimated with perfect success as far north as various points in Sweden.

If any difficulty exists in the climate of the United States, rendering it unsuitable for the rearing of sheep and wool, it must be its heat; and this must affect the wool-producing qualities of the animal alone, and not its health, as the following facts will show. There were upward of 660,000 sheep in the five most southern States, in 1839. In Florida, they have been acclimated as far south as the 29th degree. In Louisiana, Mississippi, Alabama, and Georgia, they not only flourish in the northern and more elevated sections, but on the low, fenny, tide-water region which skirts the Gulf of Mexico. In the above five States there were, in 1839, upward of 190,000 sheep below the 32d degree of latitude, viz.: in Georgia 32,986, Florida 7,198, Alabama 22,053, Mississippi 56,780, Louisiana 81,627.* They graze with equal impunity the vegetation on the margin of the Great Okefinokee Swamp (in Georgia and Florida) and on that which rankly flourishes among the ooze at the mouths of the Mississippi. It may interest some less acquainted than you are, sir, with this subject, to know that in 1839 the county in which New-Orleans stands (Orleans) contained 1,807 sheep; Jefferson, on the opposite side of the river, 6,871; St. Bernard, extending from Orleans to the Gulf, 1,154; Plaquemine, almost surrounded by the waters of the Gulf, and comprising the delta of the Mississippi, 1,832; Lafourche Interior, on the Gulf, 1,253; Terrebonne, another Gulf county, 1,013; St. Mary's, another, 8,211; and La Fayette, another, 2,622.†

No portion of the United States is lower, hotter, or more unhealthy, than much of the preceding, and none, according to commonly received notions, would be more unsuited to the healthy production of sheep. Yet, that they are healthy in these situations is a matter of perfect notoriety to all conversant with the facts. So far as health is concerned, then, we are assuredly authorized to assume the position that no portion of the United States is too warm for sheep.

We come now to the effect of climate on the wool-producing qualities of the animal. Assuming the census returns of the United States in 1840 as reliable data, they would furnish strong proof that the warmth of the climate has a marked effect in diminishing the weight of wool per sheep; and they have been adduced as furnishing conclusive evidence to that effect, by persons more accustomed to broad assertion than patient investigation.

The following will give the weight of wool per head in the States enumerated in Table No. 1, estimated from the census returns of 1840:

TABLE No. 2.

| | Lbs. | Oz. | | Lbs. | Oz. |
|----------------------|------|-----------|------------------|------|-------|
| Virginia | 1 | 7 845 | Alabama..... | 1 | 4 146 |
| North Carolina | 1 | 2 221 | Mississippi..... | 1 | 4 227 |
| South Carolina | 1 | 3 539 | Louisiana..... | 0 | 8 040 |
| Georgia..... | 1 | 4 487 | Tennessee | 1 | 4 809 |
| Florida..... | 1 | 0 410 | Kentucky..... | 1 | 6 971 |
| New-York..... | 1 | lb. 7 680 | oz. | | |

But an examination of the census will show that so far as several of these States are concerned, it is entitled to very little credit, in this particular, and that it is correct in relation to none of them.

In Louisiana, in fourteen counties from which 30,261 sheep, or nearly one-third in the whole State, are returned, not a pound of wool is returned.

In Florida, four counties, returning 228 sheep, return no wool. Let us

examine the comparative products, per head, as set forth in some of the counties from which returns of sheep and wool are both made, with a view of testing their accuracy. Escambia returns 485 sheep, and 837 lbs. of wool; Walton 386 sheep, and 575 lbs. of wool; Leon 1,798 sheep, and 3,360 lbs. of wool—or an approximation to 2 lbs. of wool per head. Nassau returns 436 sheep, and 1,200 lbs. of wool, or about 3 lbs. per head. On the other hand, Gadsden returns 1,875 sheep, and 512 lbs. of wool; Jefferson 752 sheep, and 300 lbs. of wool; Madison 223 sheep, and 50 lbs. of wool; Jackson 960 sheep, and 376 lbs. of wool, or not quite a third of a pound per fleece! Now Leon is bounded on the west by Gadsden, and on the east by Jefferson, and all lie in the same latitude, and do not differ essentially in their soil, herbage, or temperature! Madison lies immediately east of Jefferson, (though its southern angle extends somewhat farther south,) and Jackson joins Walton. Nassau is in the same latitude. Hamilton, returning no sheep, returns the product as 20 lbs. of wool!

In Mississippi, eight counties returning 15,227 sheep, return no wool; and there are repeated instances of the same glaringly obvious errors that have been exhibited in the statistics of Florida. For example, Smith county returns 741 sheep, and 1,067 lbs. of wool; Wayne 921 sheep, and 1,166 lbs. of wool. Jasper, bounding Smith on the east, returns 1,848 sheep, and 418 lbs. of Wool; and Clarke, bounding Wayne on the north, 1,199 sheep, and 188 lbs. of wool! By this, the sheep of Clarke shear less than 3 oz. per head, while those of the next county shear over a pound and a half per head. There are various other instances of under returns in the State.

In Alabama, two counties returning 2,138 sheep, return no wool; and in eight counties there are the same glaring instances of under returns with those given above.

In Georgia there is but one omission to return the wool, where the sheep are returned. In that county there were 3,360 sheep. There are eight or nine instances of obvious under returns, but these in the aggregate of the State are partly balanced by two gross cases of over returns. Cobb county returns 3,524 sheep, and 36,057 lbs. of wool; and Richmond 758 sheep, and 3,032 lbs. of wool!

In South Carolina there are at least six instances of under returns.

In North Carolina there are no returns of wool in one county, containing 2,163 sheep, and in another 7,260 lbs. of wool are returned, and no sheep. There are ten cases of obvious under returns. In one of them 46,340 sheep are made to yield but 12,686 lbs. of wool.

In Virginia there are no omissions, and no obvious under returns. There are several over returns.

In Tennessee there are no omissions, but there are seven obvious under returns and two or three over returns.

In Kentucky and New-York there are not sufficient erroneous returns to materially vary the aggregate.

The foregoing facts show that the Marshals in many counties in the most southern States entirely neglected their duty in returning the product of wool; and where over or under returns have been made, it is probable that, by a misapprehension of duty, the amount of wool *on hand* was ascertained and noted down, instead of the annual clip.

And there is another and general error in these statistics, throughout all the States, by the census including in the number of sheep the lambs of the current season, which had not, of course, been sheared at the time of taking the census. A, at the time of taking the census, owned a flock of 200 sheep over one year old, and 100 lambs. He would give in his flock

to the Marshal as 300, of course, for the census makes no distinction between lambs and grown sheep. He gave in 600 lbs. of wool, which would be 3 lbs. per head for those which had been sheared. But by the lambs being included in the census returns, it is made to appear that his sheep sheared but 2 lbs. of wool per head. In the next census the lambs and sheep should be separately returned, not only to obtain accuracy, (without which such statistics are valueless,) but the annual increase thus indicated would be, of itself, an interesting and valuable statistic.

In the preceding enumeration of erroneous returns, I have set down none as under returns where the product of wool has not been given as less than a pound per head; and where it has fallen under that amount, the returns from contiguous counties, possessing the same natural features, exhibiting a far superior product, as well as the general complexion of the returns throughout the State, have authorized me beyond a reasonable doubt so to consider it. I may add, that it is a fact of universal notoriety that there is no variety of sheep in any section of the United States, which shears but a pound of wool per head.* A careful inspection of the census, moreover, will not fail to satisfy any one that there are a multitude of under returns, (not specified by me, as the product is given over 1 lb. of wool per head,) in most of the States. This is shown by the same kind of comparisons which have already been alluded to. These are far more common in the extreme Southern States, where wool growing had not yet (in 1839) been reduced to any system, and where sheep had been little looked after or regarded. These errors grow less, as we approach the wool-growing regions of the north and north-west.

Taking those returns which we are authorized to consider correct,† it will appear that there is no great difference in the average product of wool, per head, in States separated by from ten to fifteen degrees of latitude, and no more than is clearly referable to incidental or extraneous causes, unless we come to the conclusion that the difference is in favor of the Southern States. In proof of this, the following table is offered, giving the products of some of those counties in each of the States enumerated in Tables No. 1 and No. 2, which exhibit the highest averages per head, (excluding those obviously over returned.)‡

TABLE No. 3.

| STATE. | COUNTY. | Average Weight of Wool
per Sheep. | | Total average of
the Counties given | |
|---------------------|-----------------|--------------------------------------|------------------------|--|------|
| | | Lbs. | Oz. | Lbs. | Oz. |
| Virginia | Fauquier..... | 2 | 22 5 0
7 0 11 | | |
| | Harrison..... | 2 | 0 9 0 5 6
3 5 1 1 9 | | |
| | Ohio | 2 | 2 1 0 5 0
2 6 6 8 9 | | |
| | Rockingham... | 2 | 1 4 6 4 9
4 7 9 1 | 2 | 11 4 |
| North Carolina..... | Currituck | 2 | 7 4 4 3
4 5 9 | | |
| | Person | 2 | 5 9 1 3
3 0 2 7 | | |
| | Perquimans ... | 1 1 2 | 2 2 9 2
2 3 8 3 | | |
| | Tyrrel..... | 1 | 8 1 2 0 7
1 9 4 7 | 2 | 0 |

* I consider such to be under returns, independent of the mistake made by including lambs in the enumeration.

† With the exception of the error arising from the return of lambs—which perhaps would not greatly vary the proportionable result.

‡ It is proper to say that though I designed to take the highest averages, I did not go through a formal reckoning of the average in every county in the eleven States. I took those which appeared the highest, after a somewhat careful general inspection.

|| Excluding the fractions of the ounces in preceding column.

TABLE No. 2.—Continued.)

| STATE. | COUNTY. | Average Weight of Wool
per Sheep. | | Total average
of Counties given. |
|---------------------|------------------|--------------------------------------|--------------|-------------------------------------|
| | | Lbs. | Oz. | |
| South Carolina..... | Beaufort..... | 2 | 12 10 9 4 | 2 3 |
| | Darlington..... | 2 | 13 7 5 | |
| | Georgetown..... | 2 | 13 0 4 1 | |
| | Richland..... | 1 | 12 11 7 0 | |
| Georgia..... | Bibb..... | 2 | 13 15 11 | 2 3 1 4 |
| | Murray..... | 1 | 15 3 0 6 | |
| | Twiggs..... | 2 | 10 5 7 4 | |
| | Ware..... | 2 | 13 2 0 13 | |
| Florida..... | Escambia..... | 1 | 11 9 7 5 | 2 1 2 3 |
| | Leon..... | 1 | 13 8 0 9 | |
| | Nassau..... | 2 | 13 8 0 9 | |
| Alabama..... | Bloount..... | 1 | 15 19 3 1 | 2 1 |
| | Jackson..... | 2 | 6 3 9 0 | |
| | Autauga..... | 1 | 15 19 3 1 | |
| | Greene..... | 2 | 0 2 6 0 8 | |
| Mississippi..... | Claiborne..... | 2 | 7 2 7 11 | 2 7 1 2 |
| | Hinds..... | 3 | 6 5 2 7 | |
| | Perry..... | 2 | | |
| | Warren..... | 2 | 7 1 8 5 | |
| Louisiana..... | Concordia..... | 2 | 15 2 5 1 | 2 1 1 4 |
| | St. Helena..... | 1 | 7 13 6 1 | |
| | St. Tammany..... | 2 | 13 3 5 | |
| | Washington..... | 1 | 11 10 2 1 | |
| Tennessee..... | De Kalb..... | 2 | 2 1 8 2 | 2 2 3 4 |
| | Franklin..... | 2 | 7 6 1 7 9 | |
| | Smith..... | 2 | 0 8 9 1 | |
| | Wilson..... | 2 | 2 15 0 16 | |
| Kentucky..... | Bourbon..... | 2 | 11 3 8 9 7 | 2 7 3 4 |
| | Clarke..... | 2 | 11 2 3 7 19 | |
| | Lawrence..... | 2 | 13 2 9 5 5 3 | |
| | Scott..... | 2 | 6 8 2 1 | |
| New-York..... | Westchester..... | 2 | 10 3 6 7 4 | 2 5 |
| | Ulster..... | 2 | 5 8 9 5 | |
| | Saratoga..... | 2 | 3 7 6 6 | |
| | Orleans..... | 2 | 2 4 2 15 1 | |

Taking these averages as the test, it would appear that the difference between the average products of the Southern States and New-York is, in some instances, in favor of the former. Kentucky in the middle, and Mississippi in the extreme South, exceed the average of New-York.

It is proper to say, however, that various local circumstances may have effected these results, and that taking the average of a considerable number of counties, in the several States, would essentially vary them. Notwithstanding this, the testimony which they offer is important, and becomes more so regarded in connection with another circumstance. The comparative statistics of the extreme Southern States themselves show that in a majority of cases their best products of wool come from their Southern and warmer counties.

Of the four counties in Louisiana, the product of which is given above,

the most northern lies between the 31st and 32d degrees of latitude, and all of the other three south of latitude 31°. St. Tammany, which exhibits the second best product, borders on Lake Pontchartrain. The State extends north to latitude 33°.

In Florida, all the counties given lie in the same latitudes.

Mississippi extends north to latitude 35°. All the counties given are south of 32° 30', and one in latitude 31°.

In Alabama, extending north to the same latitude with the above, two of the counties given are in the northern or mountain region, and two of them south of 33°.

In Georgia, (same northern line,) one of the counties given is in the extreme north, two south of 33° and one in latitude 31°, being the county in which lies the major portion of the Great Okefinokee Swamp!

In South Carolina, two of the counties (both bordering on the ocean) are in the low, marshy, tide-water region; and the other two are in the central region.

In North Carolina, two of the counties given join the ocean; one is on Albemarle Sound, while one lies in the central and northern portion of the State.

In comparing the product of wool in the Southern States with that of the North—and more particularly with that of New-York—we must not lose sight of the fact that in the latter wool growing has become an important business, and is reduced to a system. The sheep are kept in pastures, and are sheared at regular intervals. In the Carolinas, Georgia, and the Gulf States, precisely the reverse of all this was generally true, at least up to the year 1839. The sheep were little cared for; were suffered to breed promiscuously; and they roamed at large through forests, where, as the warm season advanced in the spring, their wool, beginning to detach itself, was left on shrubs and brambles, and in not rare instances considerable portions of it were thus lost prior to shearing.*

Giving their due weight to the preceding facts, the defects in the census, etc., it is, I think, undeniable that they account for all the deficiency in the average product of wool per sheep in our most southern States, compared with that of New-York, as set forth in Table No. 2. Indeed, sir, my own convictions are decided, and the facts reported appear to fully sustain them, that warmth of temperature, at least to a point equaling the highest mean temperature in the United States, is not injurious, but absolutely conducive to the production of wool. The causes of this are involved in no mystery. Warm climates afford green and succulent herbage during a greater portion of the year than cold ones. Sheep plentifully supplied with green herbage keep in higher condition than when confined to that which is dry. High condition promotes those secretions which form wool. Every one at all conversant with sheep well knows that if kept fleshy the year round, they produce far more wool than if kept poor. A half a pound's difference per head is readily made in this way. Within the maximum and minimum of the product of a sheep or a flock, the ratio of production always coincides with that of condition.

I have dwelt on this point at great and perhaps tedious length, sir, as the results set forth in the United States Census, unexplained, would clearly point to a different conclusion from that to which I have arrived. To invalidate testimony, ostensibly so certain and reliable, as well as to combat deep-rooted prejudices, I have deemed it necessary to scan thoroughly the accessible facts in the case.

* I make no account of difference in breeds, as affecting the product of wool between the South and North. The grade Merinos, not uncommon in New-York, would produce far more wool than the "natives," the principal sheep in the South in 1839. But the latter would equal or exceed the product of the numerous Saxon flocks of New-York.

LETTER II.

EFFECT OF CLIMATE. CONTINUED.

Effect of Climate on quality of Wool... Warmth of Climate renders Wool coarser—Reasons... Effect of Herbage... Opinions of Youatt—Doctor Parry—English Staplers—Writer... Can the tendency to grow coarser be resisted?... Opinions of Youatt—Lasteyrie—Mr. Lawrence... Experiment in Australia—Cape of Good Hope—South of Illinois—Kentucky—Tennessee—Mississippi—New-York... Warm Climates render Wools softer and longer, thus adding materially to their value... Proved to be the case in Australia... Testimony of English Wool-factors and Staplers... Same effect produced in the United States... Testimony of Mr. Cockrill.

Dear Sir: We come now to discuss the effect of Climate on the quality of Wool.

There can be but little doubt, other things being equal, that the pelage of the Sheep and some other animals, becomes finer in cold climates and coarser in warm ones. This is usually attributed, by theoretical writers, to the effect of cold and heat in contracting or expanding the pores. This may have some effect, but to suppose that the delicate tissues of the skin can act, to any great extent, mechanically, in compressing the harder and highly elastic ones of the hair or wool, or compel their attenuation so as to permit their escape through diminished apertures, like the process of wire drawing, is, it seems to me, to assume that matter acts contrary to its ordinary laws. I am rather disposed to look for the causes of this phenomenon, in the amount and quality of the nutriment received by the animal. It was stated, in my preceding letter, that warm climates, by affording succulent herbage during a greater portion of the year, maintain in greater activity those secretions which form wool, and thus increase the quantity or weight of the fleece. The weight is increased by increasing the length and thickness of the separate fibres, just as plants put forth longer and thicker stems on rich soils than on poor ones.

Mr. Youatt, in his excellent and much quoted work on Sheep, after discussing and admitting, to a certain extent, the influence of warm temperatures in rendering wool coarser, says:

"Pasture has a far greater influence on the fineness of the fleece. The staple of the wool, like every other part of the sheep, must increase in length or in bulk when the animal has a superabundance of nutriment; and, on the other hand, the secretion which forms the wool must decrease like every other, when sufficient nourishment is not afforded. When little cold has been experienced in the winter, and vegetation has been scarcely checked, the sheep yield an abundant crop of wool, but the fleece is perceptibly coarser as well as heavier. When frost has been severe and the ground long covered with snow—if the flock has been fairly supplied with nutriment, although the fleece may have lost a little in weight, it will have acquired a superior degree of fineness and a proportionate increase of value. Should, however, the sheep have been neglected and starved during this prolongation of cold weather, the fleece as well as the carcass is thinner; and although it may have preserved its smallness of filament, it has lost in weight and strength and usefulness. These are self-evident facts, and need not be enforced by any labored argument."

Doct. Parry, a correct and able English writer, remarks:

"Sheep breeders have observed a sort of gross connection between the food and quality of the fleece. . . . The fineness of a sheep's fleece of a given breed is, within certain limits, inversely as its fatness, and perhaps also (although I am not certain on this point) as the quickness with which it grows fat. A sheep which is fat has usually comparatively coarse wool, and one which is lean, either from want of food or disease, has the finest wool; and the very same sheep may at different times, according to these circumstances, have fleeces of all the intermediate qualities from extreme fineness to comparative coarseness."

* Youatt on Sheep, p. 70.

In an examination before the English House of Lords, in 1828, various eminent staplers* testify, most decidedly, to the deterioration (in fineness) of the British wools and their increase in length of staple, "since the introduction of artificial food and the adoption of the forcing system."

My own observations fully corroborate these positions. I have examined, in repeated instances, with a good microscope, the wool of individual sheep in my flock, taken in seasons when they have maintained a high condition, and in others, when, from some incidental cause they have been in ordinary or poor condition, and the difference in length and fineness is, uniformly, distinctly perceptible.

If the sheep breeder in warm climates can take advantage of the tendency to produce greater quantities of wool, following that supply of succulent herbage throughout the year which Nature has placed at his disposal, and at the same time, by any unexpensive means which he can employ, combat the correlative tendency to increased coarseness of fibre, he has most assuredly, other things being equal, an entire advantage over the breeder in colder regions.

We come now to the important inquiry, Can this latter tendency be successfully combated; or, in other words, can wool of any desirable fineness be produced in countries as warm, for example, as Louisiana, Mississippi, &c.?

Let us examine Mr. Youatt's testimony on this point also. He says:

"Temperature and pasture have influence on the fineness of the fibre, and one which the farmer should never disregard; but he may, in a great measure, counteract this influence by careful management and selection in breeding. . . . A better illustration of this cannot be found than in the fact that the Merino has been transplanted to every latitude on the temperate zone, and some beyond it—to Sweden in the North and Australia in the South—and has retained its tendency to produce wool exclusively, and wool of nearly equal fineness and value."[†]

Mr. Lasteyrie, equally good authority, uses the following language. When he speaks of the preservation of the breed in its "utmost purity," we are undoubtedly to understand him to refer as much to the fineness of the wool as any other point, this being the distinguishing mark or excellence of the breed.

"The preservation of the Merino race in its utmost purity at the Cape of Good Hope, in the marshes of Holland, and under the rigorous climate of Sweden, furnish an additional support of this, my unalterable principle: fine wool sheep may be kept wherever intelligent breeders exist."[‡]

Samuel Lawrence, Esq. the head of the great Lowell Manufacturing Company, in Massachusetts, who, by his vast purchases of fine wool in all parts of the United States for a long term of years, and his intimate practical acquaintance with the quality of the article, is entitled to have his opinion on this point regarded as of as great weight as that of any other individual, says:

"That the properties of wool are affected by herbage and soil, I have not a doubt, and were it not invidious, I would name some sections where wool growers are greatly favored by Nature. One thing is certain, whatever may be the character of the soil, where there are good shepherds there is sure to be found good wool. By judicious selections and crossing, I believe a breed may be reared which will give four pounds of exquisitely fine wool to the fleece."^{||}

This last sentence of this important extract, though not bearing so particularly on the point under examination, is recorded in its original connection for subsequent reference.

Australia and the Cape of Good Hope being cited by the distinguished

* Youatt on Sheep, p. 71, where the names and testimony of these individuals are given, and more at length in Bischoff on Wools, &c. vol. 2, p. 118 to 200. † *Id.* p. 69—70.

‡ Lasteyrie on Merino Sheep, p. 101.

|| Letter of Mr. L. published in "American Shepherd," p. 436. (658)

English and French writers above quoted, as offering instances of the perfectly successful acclimation of Merinos, without deterioration of their wool, in warm climates, it may be well to inquire a little more particularly what the climate of those countries is; and what, if any, the other circumstances connected with them, having an influence on the quality of the wools grown in them.

Port Jackson, in Australia, in the vicinity of which the Merinos were first introduced, and are now extensively bred, lies in $33^{\circ} 55'$ South latitude, corresponding as nearly with the latitude of Georgetown, South Carolina, as that of any other important point in our country.* In describing this region (New South Wales) Malte Brun says :

"The coast itself is high but not mountainous; and it is partly shaded by trees of gigantic size. Toward the south-east a great part is covered with coppice; much also is occupied with marshes. About Botany Bay the soil is black, rich and exceedingly productive in plants. The north-east part seems lower. The coast is covered with mangroves. . . . The heat of December rises to 112° Fahrenheit. The forests and the grass have been known spontaneously to take fire.† The North-west wind, like the Khamseen of Egypt, scorches the soil and reduces it to a light dust. . . . Notwithstanding these disadvantages, the climate is very healthy, and very favorable to population. . . . Those parts in which different trials have been made have rather too warm a climate for common barley and oats, though these grains have been found to succeed tolerably well on the poorer soils. . . . All the vegetables grown in England are produced in the English colony. . . . Peaches, apricots, nectarines, oranges, lemons, guavas, loquets, cherries, walnuts, almonds, grapes, pears, pomegranates and melons attain the highest maturity in the open air."‡

The country, most of it, is remarkably deficient in water,§ though many portions are subject to destructive inundations.¶ Its drouths are unequalled for their duration and intensity in, perhaps, any inhabited portion of the globe.** Its vast plains, occasionally highly fertile, but more usually, only in detached spots, afford pasture throughout the year.

The physical features of this country, its system of sheep husbandry, etc. will be more particularly alluded to hereafter.

The English first introduced into this remote possession the coarse hairy sheep of Bengal. In the short space of three years these were so far changed by the effect of the climate and other circumstances, that their hair was entirely gone, and was succeeded by a fleece of wool.†† The South-Down and Leicesters were subsequently introduced, and their crosses with the Bengal sheep soon became as fine as the pure bloods of the former. At length some Merinos were imported by the colonists, and, says Mr. Youatt, "The experiment was satisfactory beyond their expectation. The third or fourth cross with the then prevalent sheep of the colony produced an animal with a fleece equal to that of the pure Merino in Europe; and the wool of the pure blood seemed to improve as rapidly as the native breed had done."‡‡ In 1810, the export of wool from Australia and Van Dieman's Land was 167 lbs.; in 1833, it had reached 3,516,869 lbs.|||| In 1843, it amounted to 16,226,400 lbs. §§

The following, from a table in McCulloch's Dictionary of Commerce, will show the current prices (reduced to American currency) of some of the imported and domestic wools, in London, March, 1834 :

| | § | cts. | § | cts. | ENGLISH : | § | cts. | § | cts. |
|-------------------------|---|-------|---|------|-----------------------------|---|-------|---|------|
| SPANISH.....per lb. | — | 60 to | — | 77 | North & South-Down. per lb. | — | 44 to | — | 48 |
| PORTUGUESE | — | 44 " | — | 62 | Leicester..... | — | 33 " | — | 44 |
| GERMAN, SAXON, &c | — | 48 " | 1 | 15 | Lincoln, Cotswold, Romney | | | | |
| AUSTRALIAN | — | 50 " | 1 | 00 | Marsh..... | — | 40 " | — | 44 |

* Georgetown is perhaps half a degree nearer the Equator.

† This place is twelve miles south of Port Jackson.

‡ Malte Brun cites Collins (an author frequently quoted in relation to New South Wales) for this strong and, perhaps, exaggerated assertion.

§ Spooner, Youatt, etc.

¶ Malte Brun.

** See McCulloch's Commercial Dictionary.

†† Youatt on Sheep, p. 184. Spooner, Diseases of Sheep, p. 62.

‡‡ lb. p. 184.

|||| lb. et Spooner.

(639)

§§ Spooner.

It will be seen from this, that the best Australian wools already excelled the best Spanish, and were more than midway between them and the best Saxon. When we consider the almost infinite difference in the care, both in breeding and management, bestowed on the Saxon and Australian sheep, it shows most conclusively the adaptation of the climate of Australia to the production of the finest wool—or, at least, that the adverse effects of its warm temperature, and the incidents to that temperature, are easily overcome. In Saxony, sheep are numbered, oftentimes their separate pedigrees registered, and each breeding ewe is stunted to a ram carefully selected with reference to her individual qualities. In Australia, where less capital and labor are employed, flocks of about three hundred breeding ewes*—where the country is destitute of timber, sometimes a thousand†—roam from one fertile and watered spot to another over the vast plains, in charge of the convict shepherd; and this system is followed throughout the year, including the tuppings season. Three flocks are always penned together at night,‡ so that as many as nine hundred breeding ewes, of varying quality, must be promiscuously bred to, say, from thirty to thirty-five rams, running promiscuously among them.

The Cape of Good Hope is in south latitude $34^{\circ} 23' 40''$.

Mr. Youatt, in describing the sheep husbandry of this region, overestimated, I think, the heat of the climate. Separated by lofty mountain ranges from the interior of Africa, the fertile regions adjoining the coast are not swept by its scorching winds, and the temperature is comparatively mild. "In a meteorological register kept at Cape Town, from Sept. 1818 to Sept. 1821, embracing a period of three years, the highest heat marked is 96° , the lowest 45° , Fahrenheit. The mean and annual temperature scarcely 68° —of winter 61° , of summer 89° ."|| But sheep and their wool suffer from the fine sands which are lifted and driven by the prevailing winds. Says Malte Brun, "the wind blows often from the south-east with great violence. Nothing can be secured from the sands which it drives before it; they penetrate the closest apartments and the best-closed trunks. At this time it is not prudent to go out without glasses, lest the eyes should be injured."§

Though the climate can scarcely be designated a "torrid" one, as Mr. Youatt speaks of it, the mean temperature of its winter (61°) conclusively shows that cold can have nothing to do here with rendering the wool finer by a contraction of the pores. If, therefore, it can be shown that the wool of the fine breeds does not deteriorate in quality, it sufficiently proves that Australia is not an incidental exception in the testimony which it presents on the point under examination, but that it illustrates the uniform operation of the physical laws which pertain to the growth of wool.

After one or two unsuccessful attempts, the Merinos were acclimated at the Cape by the English colonists. In 1804, the colony numbered 536,631 sheep. In 1811, there were 1,293,740. In 1810, the import of wool into Great Britain was 29,717 lbs.; in 1833, it was 93,325 lbs.¶

In Willmer & Smith's "Liverpool Annual Wool Report," for 1846, it is stated, "The shipments from this quarter (Cape of Good Hope) show great improvement, amply testified by the high rates the best flocks have commanded during the season. . . . The best parcels now take rank with those from Australia."** The system of breeding and general management at the Cape closely correspond with those of Australia.

Let us now, sir, turn to the experience of our own country. I do not

* Cunningham's "Two Years in South Wales."

† Ib.

‡ Ib.

|| Malte Brun, vol. ii. p. 112.

§ Ib. vol. ii. p. 112.

¶ Youatt on Sheep, p. 181.

** Willmer & Smith's *European Times* of Jan. 4, 1846.

know that a sufficient number of experiments have been made as near the Equator as Cape Town and Port Jackson, to have their testimony regarded as entirely decisive on the point under consideration, but those have been made which throw much light on this question, if, indeed, any more is considered necessary. In the south of Illinois (Edwards county), in about latitude $38^{\circ} 30'$, the finest varieties of sheep were introduced by Mr. George Flower, about twenty years since, from which he has bred up an extensive flock. That gentleman says: * "No deterioration in the wool has taken place; on the contrary, the wool fibre is somewhat finer." I have myself seen various specimens of Mr. Flower's wool, of the clip of 1844, and it bore an excellent character for fineness and evenness.

In a letter which I received from Hon. Henry Clay, in 1839, he says: "I have for some years had only the pure Saxony at my residence; but I am now satisfied that I should have derived more profit from sheep producing a wool less fine.† The climate of Kentucky is, however, well adapted to the Saxon sheep." Mr. Clay's residence is in about latitude 38° .

Mr. Mark R. Cockrill, of Nashville, Tennessee, in a letter published in the American Shepherd,‡ says:

"I have about a thousand head of fine sheep, and from 400 to 500 long-wooled or mutton sheep. My Saxon sheep were imported in 1824 or '26—I cannot say which—and I find as yet no falling off in quantity or quality of their fleeces; on the contrary, I believe a little improvement on both points, and a little more yolk, when well provided for, which, you know, does not abound much in the Saxon breed. In addition, the fleeces are a little more compact than formerly—hence more weight; and, from our mild climate, *the staple has become longer*. . . . I assert it to be a fact that the cotton region I am now in [Mr. Cockrill dates from Madison county, Mississippi, where a part of his sheep are kept], in about latitude 32° north, is better than any country north of it to grow wool, as the sheep can be kept all the time grazing, by sowing small grain; for, if grazed off, it quickly grows again in a few days; and the wool of the fine Saxon sheep in this climate is softer and more cotton-like than any I have ever seen, although I have samples from all parts of the world. I have traveled from this very place to Boston, sampling all the sheep of note on the way, and I found nothing on my journey or at Boston as good as the wool I had grown, and so said all the wool staplers whom I met with, and they were not a few. I presumed, in reality, that the blood of my sheep was no better than many I saw, but the superiority of my wool I ascribed to our climate, and the provision for the sheep of succulent food the year round.—The weight of my fleeces is fair—say from 3 to $5\frac{1}{2}$ lbs. each. . . . Tennessee is not the true grass climate; about 23° north is the most congenial for grass; notwithstanding, our State is fair for pasture; blue and orchard grass, white and red clover, prosper pretty well. . . . There is much country in Tennessee and other Southern States not fit for the plow, and would do admirably well for fine-wooled sheep, and can be profitably so employed. A small capital thus appropriated here in Mississippi would do better than cotton growing at present prices."

Nashville is in about latitude $37^{\circ} 15'$; and Madison county, Mississippi, is about half a degree farther north than mentioned by Mr. Cockrill, viz. extending from $32\frac{1}{2}^{\circ}$ to 33° ; its county seat (Canton) being more than a degree nearer the Equator than Port Jackson in Australia, and about two degrees nearer than the Cape of Good Hope!

Mr. Morrel, the compiler of the "American Shepherd," has obtained specimens of Mr. Cockrill's wool, and he says of them, "Judging from the samples, the conclusion is inevitable that little or no deterioration has been produced by the climate."||

This testimony of Mr. Cockrill is very important, both from the length and extent of the experiment. I have no doubt of the perfect correctness of his assertion that his wool has improved in those low latitudes; but the cause assigned by him cannot be received as the correct one, so far as the increased fineness of the fibre is concerned. The improvement in this particular, under a system of feeding which has "increased" both the "quan-

* In a letter published in the Prairie Farmer.

† Mr. Clay here alludes to the Merinos.

‡ P. 409.
(661)

|| American Shepherd, p. 41.

tity" and the "yolk" of the fleece, cannot be ascribed to the climate, nor to the feeding itself. It is undoubtedly owing to Mr. C.'s system of breeding and selection, a point which will be fully discussed hereafter.

If feed or condition exercise the principal influence on the fineness of wool (that is, within the range of variation to which it is subject on the same individuals), it follows that the effect may be produced in any climate, for high condition throughout the year is attainable in the most rigorous ones, by the supply of plentiful and rich food. The wool secretions are incident on condition—fatness, however superinduced.* It again follows that if wool of the highest degree of fineness (for the breed) can be produced in New-York, although the sheep is kept in a decidedly fat state throughout the year—quite as fat as it would become, grazing on green feed all the year round—that wool of equal fineness can be produced by the observance of the same influencing conditions (apart from feed) by the southern breeder.

Here again, undeterred by any considerations of what I deem a false modesty, I shall offer facts founded on my own personal experience as a sheep breeder; and I would remark, once for all, that throughout the whole of these letters I shall never so far prefer *beliefs* founded on the assertions of others, to *actual knowledge*, based on facts repeatedly and constantly brought under my personal inspection, for a number of years, as to suppress the latter, to rely solely on the former.

I have succeeded, in repeated instances, in producing an exquisite quality of wool, decidedly above the average of the breed (Merino) in the heavy fleeces of sheep kept fat the year round. I have made it a sort of a test latterly, in the selection of rams, to choose only those which not only carry heavy fleeces, in any condition, but which, in the highest, yield a wool equalling the choicest samples to be found on this variety. These facts will, by and by, be placed in a definite and tangible form, by the recorded testimony of the scales and the microscope.

But though the natural effects of warm climates and their incidents, to increase the bulk or coarseness of the fibre, is one which can easily be resisted, they work a change of another kind in the character of wool. They cause a longer fibre and a greater softness of staple. The effect of succulent nutriment during the year in increasing the amount of the wool will exhibit itself; but the skill of the breeder can so far regulate its action, that the increase is in the length, rather than in the diameter or bulk of the fibres. It is not difficult to conjecture why a staple of more rapid growth, supplied to excess with the secretions which enter into its composition, unexposed to great and rapid variations of temperature, should retain a greater degree of softness than one produced under opposite conditions. But, whatever the causes of these phenomena, their existence is placed beyond a doubt.

The increased *length* of staple, resulting from the nutriment of warm climates, has been sufficiently adverted to. The following statements made by some of the most eminent wool-factors, staplers, etc. in England, before a Committee of the House of Lords, in 1828, place the other point beyond controversy.†

Mr. Henry Hughes, wool-broker, London, says :

* No one has asserted, so far as I am informed, that dry feed will produce less wool than green feed, if the same degree of fatness is kept up. On the other hand, the rich cereal grains, oil-cake, &c. (without some of which a high degree of fatness cannot be maintained, on dry feed alone, during the four or five months' winter in latitudes north of 42°), might be supposed to be quite as conducive to the production of wool as grasses.

† For extended minutes of this very interesting investigation into the state of the wool-trade, &c. &c. in Great Britain, see Büchhoff on Wool, &c., vol. ii. p. 112 to 200.

"Latterly they (Australian and Van Dieman's Land wools) have been of varied qualities, but all possessing an extraordinary softness, which the manufacturers here so much admire that they are sought for more than any other description of wools, from that peculiar quality, which is supposed to arise from the climate alone. They are known to require less of the milling or fulling power than any other descriptions of wools. . . . They are better adapted than the German wools to mix with British wools, because the superior softness which I have stated gives a character, when mixed with English wool, that the other does not, from the hardness of the fibre."^{*}

Mr. Stewart Donaldson, merchant, London, says :

"I have no hesitation in pronouncing that the wools of New South Wales and Van Dieman's Land are decidedly preferred to the apparently similar descriptions of German wool. . . . They have a softness and silkiness about them which, when worked up into cloth, shows itself more distinctly than in the raw material. I conceive that it is dependent on the climate alone. I am of opinion that wool of that quality could not be produced in any part of Europe."[†]

Mr. Thomas Legg, wool-stapler, Bermondsey, says :

"There are some of these wools of very beautiful quality, as good as any of the German wools."[‡]

Mr. Thomas Elsworth, wool-broker, London, says :

"The peculiarity of the climate of New South Wales appears to have a very great effect on wool, so as to reduce it from a harshness to a very fine texture."^{||}

This was the substance of *all* the testimony on this particular point ; and when it is understood that the investigation was an issue between rival interests, where all the facts were thoroughly sifted, the fact that the above assertions were undisputed shows that they were considered of an undisputable character.

Allusion has already been made to the loose and careless system of sheep-breeding, etc. in Australia, compared with that in Germany. Taking this into consideration ; taking also into consideration that the flock furnishing the best wool in Australia (Capt. McArthur's) is composed of grade sheep (Bengal and English, graded up with Merino and Saxon rams), the trifling effect of climate is made more strikingly to appear.

The statements of Mr. Cockrill in relation to the softness of the wools grown in Tennessee and Mississippi, sustain and are sustained by those above given ; and they go to show that it is the result of a general law and not of any peculiar local influences peculiar to Australia

MADDER—INFORMATION WANTED.—We extract from a letter dated Columbia, Arkansas, the following :

"You have requested your subscribers to call for information on any particular agricultural subject which they might suppose would be useful. I will thank you for any you can give on the *cultivation of madder* in the United States—where seed may be had, &c."

Our subscriber's request shall have due attention when we can get time. In the interim, to show that we are in earnest, the Publishers of *THE FARMERS' LIBRARY* authorize us to offer, as a premium, the two volumes into which *THE FARMERS' LIBRARY AND MONTHLY JOURNAL OF AGRICULTURE* for the first year are handsomely bound up. They each embrace about 600 pages, and one of them contains works worth \$50 to any cultivated, inquiring farmer—if, indeed, it be not out of all character to estimate knowledge in dollars and cents. This premium to be given to the best and most complete essay answering the above inquiries, and to be awarded by a Committee to be appointed by the Farmers' Club of New-York.

* Bischoff on Wool, &c. vol. ii. pp. 182-3.

† Ibid. 183-4.

‡ Ibid. 184.

|| Ibid. 184.

PLANTING IN SOUTH CAROLINA AND IN MISSISSIPPI.

EXPENSE AND RESULTS COMPARED. No. 2.

Mr. Editor: I have no wish to be drawn into a controversy on the vexatious question of the *Protective Policy*, nor have I any desire to involve others in it; but I feel called upon to reiterate the statements made in my former communication in regard to the product of cotton and corn on the lowlands of Mississippi and Louisiana. I do not wish to be understood as speaking or writing in reference to the product of this particular section, for it is well known that for the last six or seven years the product of cotton here has been anything but satisfactory. But I do know that there are plantations, *and a good many of them*, on the lowlands, that have averaged *nine bales to the hand for a series of ten years*, and I know some plantations that have done still better. I therefore confidently assert that the average product per hand, on *all* well-regulated plantations not subject to inundation, has exceeded eight bales *for the last ten years*; and I am quite as confident in asserting that the average product of corn per acre, on the same plantations, has been *over thirty bushels*.

In reference to what I said in my last on the subject of the injury to the planting interest from the *Protective Policy*, allow me again to say that, if the cotton planters on the lowlands of Mississippi and Louisiana are *oppressed* by high duties, they do not seem to be aware of it; and it is only among *political* cotton-planters that we hear of this "*oppression*" in this region. I did not mean to admit that the cotton-planter's expense of clothing for his people was enhanced in proportion to the duty: I simply meant to say that *if the whole duty* was added to the cost of the article, and paid by the consumer, the "*oppression*" was not so great as to be *onerous*.

I am aware that there are other articles which are consumed by the cotton planter, besides clothing, that are slightly affected by the Tariff; but I do contend that as cotton-planters we have no just ground of complaint against the *Protective System*, even though many, *nay, all* the articles we consume are enhanced in price by it. If the domestic fabrics are rendered dearer to the consumers here, they are reduced in price to the consumers elsewhere; and thus the consumption of our staple is extended and enlarged, and the ultimate interests of the planter promoted. But I cannot admit that the price to the consumer here is enhanced to anything like the extent of the duty; for to yield this would be to admit that many foreign fabrics are sold far below the cost of production, and far below, in some instances, the *cost of the raw material*. I contend that *many* of the articles consumed by the planter have been *reduced in price* by the *Protective System*; and I boldly assert that, so far as my acquaintance extends, the most intelligent cotton-planters, who are far from the influence of political aspirations, do not think their interests injuriously affected by the system. True, my acquaintances may be more dull of comprehension, or less quick in their perceptions of injury and oppression, than they should be. They may be robbed, and yet, not "*missing what is stolen*," deem themselves "*not robbed at all*."

If the cotton-planter gets his bagging and rope for less than *one-third* of what he paid prior to the Tariff of 1824 and '28—and an article, too, that protects his cotton better, on account of its superior fabric, and sells for more, on account of its greater weight; if he gets his negro shirting, of better quality, for *less by half* than he formerly paid, and *less than he can manufacture it, by his own labor from the raw material grown by himself*; if he gets Kentucky linseys and jeans, of a more durable quality, and for half the price he formerly paid (before the *Protective System* was adopted) for English plains and kerseys; and if he gets his plows, hoes, axes, nails, files and spades, for half what they formerly cost him, and his shoes for a third less, he may be "*oppressed*," but I really have not been able to see how or where!! And I am disposed to doubt whether he will get these articles at a lower price under the Tariff of '46 than he paid for them

under that of '42. Most of the articles consumed by him are so reduced by domestic competition as to admit of no greater reduction in price by the change to Free Trade. There may be occasional reductions from glutted markets, but nothing permanent, especially if the *quality* of the domestic fabric be compared with the foreign. All this, however, we will be able to test, for the new Tariff will last long enough to afford us the opportunity, though I am not willing to admit that it will be the *permanent* policy of our Government. Salt will undoubtedly be reduced in price some 10 or 15 cents a sack. Iron will not, for a reason that will alike operate on sugar. I am *now* free to admit that the price of the latter is not likely to be so reduced as to interfere with new investments of capital and labor in its production. But if the price to the consumer is not reduced, where the benefit of the reduction of duty? Will not the reduction go into the pocket of the foreign producer? The price of bagging cannot be lower under the new Tariff; for it cannot be imported *free of duty* and sold for less than the Louisville prices of last summer and spring, to wit: 7½ to 8 cents; and but for the protective system, we never should have had domestic bagging, but still have been dependent on the foreign fabric, the quality of which is fully one to one and a half cents per yard inferior to the domestic.

I therefore cannot see wherein the cotton-planter is to be benefited by the new Tariff; and I may be pardoned for my obtuseness, but not suspected of *willful* blindness.

Why is it, that with the opening of the ports of Great Britain, and the immense demand for our bread stuffs consequent upon another short crop in Europe, and the almost total and universal destruction of the potato crop, there should be so little importation of foreign goods? Why is it that exchange on England is so far below its legitimate *par*? If our new Tariff has invited importations, why is it that we do not see the effect of large orders on the rate of exchange? The reason is obvious: our own importers believe the country will buy no more than it will consume; and they are willing to leave the exporters to bring back their returns in gold. Is the cotton-planter to be benefited by this? If returns could be made in British goods, with any reasonable hope of profit, surely there would be no returns in gold. Is it not fair, then, to assume that a greatly enlarged consumption will not necessarily follow a modification of the Tariff of '42? That our markets may and will be glutted by foreign fabrics is possible, nay probable, and the price of commodities reduced thereby; but it will be by British manufacturers, to get clear of surplus stocks; and the effect will be but *temporary*.

But I have already written more, much more, than I intended. I hope S. B. will not attribute to me a desire to prolong a controversy which is not likely to result in conviction on either side. My only object is to satisfy him that out of Carolina there are persons who do not hold to the *Carolina doctrines*.

I am free to confess that there is the strongest probability the "*true cotton region*" will be found farther north than 31° 30'—nay, I am disposed to think that for the next ten years it will be found to be north of 33°, and in ten years after, *north of 35°*. I believe the whole region south of 33° will be, to a great extent, abandoned as a cotton producing country. We have fearful indications that this will be the result; and *how far north* the culture may be pushed or found advantageous, time will soon tell.

Before I conclude, let me assure S. B. that I had no wish by my first communication to invite South Carolina planters to migrate to this region; I could not conscientiously do it. For the last seven years in this parish we have not averaged 5 bales (or 2,000 lbs.) to the hand, and this year *not one and a half bales*. It would be preposterous if not wicked and cruel to invite planters from any section, into this region, and I have too high an opinion of the chivalry of the Carolinians to expect them to settle among the *repudiators* of our sister State.

X. Y. Z.

Rapides, La., 17th November, 1846.

P. S. I owe you an apology, Mr. Editor, for this long communication, the greater part of which may be deemed improper in a periodical such as yours; but I promise you this shall be my last.

The Editor trusts that no friend can misunderstand him. The object of his first and greatest anxiety is, that the readers of this Journal, and American agriculturists generally,

should be persuaded that theirs is, even beyond all others, an employment of *the mind*; and that, as Liebig says, it must depend hereafter for all material improvement, on the application of science to its practice. On this depends both its dignity and its profit. We earnestly desire, therefore, to see American cultivators rise in the strength of their numbers and the value of their products, and *extort* from Government their full proportion of the means for the *diffusion of knowledge* connected with *their* pursuits. This is a theme which of itself opens a wide field for discussion, and in which, we lament to say, we have not had the benefit of the brighter lights of our brethren of the agricultural or the general press of the country. Yet can any one, even the most careless inquirer, fail to perceive that on no one thing does the prosperity and true glory of our country depend, in anything like the same proportion that they do on the *general enlightenment of the landed interest*?

Again: We desire, also, to describe all useful improvements in the tools and machinery of Agriculture, and to present the result, as far as possible, of all field experiments—not to excite vulgar, senseless amazement at the sight of what can be done, but, by accompanying such extraordinary results with plain philosophical explanations, show in that way on what principles they depend. Here, again, is another field for practical inquiry and observation, which demands much space and all the aid of the best assistance to do it justice.

We are far, very far, from failing to perceive that the respectability and the success of the cultivator are connected with his knowledge of *the bearing of the laws* on the welfare of his employment. No one can be more sensibly impressed than we with the truth of the fact that there is between national legislation and national manners and well-being, a *constant, indissoluble connection*. It would be almost impossible to overestimate it, in extent or influence. The spirit of public legislation in this country, for years past, and under all parties, is a base preference for and promotion of *military over civil services and virtues*! such as well becomes despotism, where the throne is to be upheld by the bayonet, against the progress of reason and philosophy. In vain have we implored the coöperation of abler pens in exposure of this degenerate prostitution of public sentiment and public legislation. Not an Editor nor patriot writer comes to our assistance. We point hastily at these objects to show that this Journal, being alone in this path of public duty, we have need of much space to endeavor to persuade the friends of Agriculture that the plant must be watered at the root—that the *rising generation* must be instructed in the application of the arts and sciences to field practice, and that for this they have a right to demand ten dollars for every *one* that is applied, of their money, to any other sort of science or instruction. We have need, too, of much space to keep way with the progress of practical improvements in the machinery and processes which discovery brings to light, and which experience and philosophy prove to be expedient and profitable. Hence it is that we are compelled to be anxious not to have our pages engrossed by the discussion of questions in political economy, which, especially the doctrine of protection, being connected with the struggles and the ascendancy of parties, find room and welcome in every village paper in the Union, while scarcely one of them, even those which are exclusively dependent on country support, will come to our aid in claiming for Agriculture the establishment of schools and academies for instruction in *its elementary and practical principles*, or any sort of public care and consideration. Well we know, and we are proud to say, that we are honored with the patronage, whether many or few, of a *class of readers* qualified by every attainment and faculty, to throw the fullest lights on both sides of the vexed question: How far is it expedient and wise to invoke the powers of Government to influence the profits of labor and capital, over and above such duties as may be indispensable to an economical administration of Government? We are, moreover, proud to refer to the temper and spirit of the respected correspondents who, we dare say, almost insensibly to themselves, have glided more largely than they had intended, into that topic; and were it certain that the same temper and limits would always be observed, far from discouraging, we should invite, such statements of important facts and such conflicts of reason, on principle. We would do it were it only for that highest of all pleasures, the intellectual gratification to be derived by every liberal mind from witnessing the manly and the gentlemanly conflicts of cultivated intellects. On this, as on

every subject to which the mind can find time to turn its attention, the prayer of well constituted mind will be for light—more light. Oh that we could witness one-tenth as much zeal on the subject of *Agricultural Education* as is everywhere displayed for and against protective duties! We doubt not we have said enough and even more than was necessary, to make ourselves understood. We presume not to shut our pages against discussion so limited and well managed as that with which they have been honored on this occasion; but every considerate reader knows how hard it is to set limits, when they are once opened, and how invidious to criticise the language into which the most liberal minds may be honestly betrayed in the warmth of controversial discussion.

NEWCASTLE COUNTY AGRICULTURAL SOCIETY—ITS INFLUENCE, OFFICERS, &c.—Few Societies for the promotion of Agriculture have been conducted with so much zeal, judgment and perseverance; nor has any made its influence more visible in the improved aspect, productiveness and value of the country over which it has operated.

We very much doubt whether, in any part of Pennsylvania or New-York, the progress of improvement has been so marked—the cultivation so neat and thorough—the principles of improvement better, if so well, understood—or the appreciation so steady and decided in the selling price of the lands. Nor is there any section of country where agricultural melioration may be more distinctly traced to the effects of association for these purposes. Out of that association have grown discussion, comparison of opinion and experience, the exhibition of the results of experiments conducted with intelligence, and the patronage and perusal of agricultural journals, &c. Among these last it would be unjust, in this connection, not to refer particularly to the *FARMER'S CABINET*, published close at hand, and conducted with singular judgment and discretion, by Mr. TATUM. We may frankly add that we should need no better proof of a culpable insensibility to the value and the pleasures of *knowledge*, in his own calling, on the part of any landholder in Delaware or Pennsylvania, than to know that he was not a patron of the *FARMER'S CABINET*. It might be deemed invidious to refer, especially too, to the active and untiring zeal of Dr. THOMPSON, of Wilmington, for the beneficent results of which we have spoken, if it was not on all hands matter of notoriety and of applause. Some time since, the Doctor succeeded in his wish to retire from the Presidency, but, not weary of doing good, we are glad to perceive, by an account of the proceedings of the last meeting, that he consents to continue his valuable services in the no less useful station of Corresponding Secretary. At their late meeting, an evidence of their good judgment was evinced in changing and alternating the places of exhibition, and in separating the Horticultural Department from the Agricultural Society. Either branch is enough to tax as much judgment and attention as can be commanded for either, and both are worthy of much more than can generally be gotten for them.

JAMES CANBY having declined reelection as President of the Newcastle Agricultural Society, at the Eleventh Annual Meeting in October last, the following officers were elected:

President—JOHN C. CLARK.
Vice Presidents—Joseph Carr, John H. Price, Jas. J. Brindley, M. B. Ocheltree, Rathmell Wilson, Giles Lambson, Philip Reybold, William Rothwell, John Jones, George Tybout.
Cor. Secretary—Dr. J. W. Thomson.
Rec. Secretary—Bryan Jackson.
Treasurer—James Canby.

Counselor—Edward W. Gilpin.
Directors—Anthony Higgins, Samuel Canby, Z. B. Glazier, John W. Andrews, Dr. R. McCabe, Richard Jackson, William Robinson, Henry Latimer, James N. Cleland, Henry Du Pont, J. S. H. Boies, Jesse Gregg, Philip Reybold, Jr., Wm. Tatnall, William S. Bouldin, John Higgins, Francis Sawdon, Edward T. Bellah.

KILN-DRIED CORN MEAL.—A new commodity has been introduced into Buffalo market, in the shape of kiln-dried corn meal, which bids fair to become an important article in trade. It is manufactured at Toledo, where is erected an apparatus capable of turning out 2,400 bushels per day, and it is put up in very neat packages similar to flour.

CULTIVATION OF THE ORANGE.

(Concluded.)

PROPAGATION.—It is said that plants of the orange and lemon—the same may not hold good of the other species—raised from seed, and never grafted, produce the best crops, both in quantity and quality; but these trees, when old, become so thorny that it is troublesome to gather the fruit. If it be sired to have any particular variety of fruit, grafting or budding is a means of doing so with certainty. These operations also cause the plant to fruit at an earlier age.

STOCKS.—The citron stock is the best for orange, lemon-citron, and probably for all the species. It grows more quickly, and causes the graft to fruit sooner, as it would appear: fortunately, then, the citron is the most easily propagated by cuttings. It is said that in the neighborhood of Seville, the stocks used are raised from seed of the bitter orange. Loudon says: "Shaddock stocks are the strongest, and next to these the citron." "Four years old is a good age for stocks." I conceive, however, that with all trees, but especially the orange—as the growth of the bark is very slow over wounds in the trees, unless covered with a composition to exclude the air—it is better, whether in budding or grafting, to follow the modern British practice of grafting—that of using small stocks.

BUDDING.—In budding, observe that the shoots from which you take your buds are round, the buds of these being much better and easier to part from the wood than of such as are flat and angular. Let the buds be inserted at the south side of the stock. By inserting more than one, you increase the chances of success. In a month it will be observable which have taken; then untie them. A head may be formed by cutting back the shoot from one of the buds—destroying the other if it have taken—to four buds or eyes. The stock should be taken off, if small, with a knife; if large, with a fine saw; the cut should be made in a slanting direction—not directly across the stock—the cut terminating immediately above the inserted bud. The operation of budding may be performed at any season.

GRAFTING.—This operation also may be performed at any time. Whip grafting is probably the best mode: grafting the stocks when small—in fact with the stock and graft as nearly as possible of the same size. A variety of the whip manner is described by Cushing, in which the top of the stock is left on. From the scion as for the common whip-graft, and then, without taking off the head of the stock, cut from the clearest part of its

stem an equal splice as smoothly as possible; do not tongue the scion, but tie it on neatly and firmly with matting and clay, in the manner of a graft. When the scion begins to grow, remove the matting by degrees. I have sometimes seen the orange grafted under the surface of the ground, removing the earth from around the stock so as to lay it bare down to the roots, and inserting the graft as low as possible. When the operation has been finished, replace enough earth to completely cover the insertion of the graft. These grafts are to be treated as those inserted above-ground, except that they need not be clayed. Cut off the stock as directed under the head of budding.

SEED AND SEEDLINGS.—In raising plants from seed, if the seeds be received from abroad, they should be sown *immediately*, as they will not keep many weeks after having been taken from the fruit. The seed from rotten fruit is the best. It behooves every one who is interested in extending the cultivation of these plants to be on the look-out for the seeds of such fruit as come within their reach, whether the produce of the Colony, or imported, for we occasionally receive them from the Cape, and from the East.

If taken from the fruit, first dry them; then sow in light, rich earth, covering them about a quarter of an inch. In three weeks they will be up, if the weather be genial. When they shall have been up a month, transplant into pots, or, for want of these, small boxes, singly or into nursery rows 18 inches by 6, according to convenience. The pots or boxes should be sunk to the edge in the ground, to prevent the risk of the mould becoming dry by the sun or wind. The advantage of having single plants in pots or boxes is, that when you form your orangery, you may at once turn each tree out into its place without checking its growth. They are planted so close in the nursery rows, that they may be drawn up with straight stems. If preferred, the planting out into pots or rows may be deferred till they are half a year old, or more, taking advantage of the proper planting season, indicated by the dormancy of the plant. If, however, you plant in a dry soil, the removal should take place from April to June.

LAYERS.—In this country, where we have so little fruit whence to obtain seed, and the supply from abroad is so scanty, every means should be had recourse to for increasing the number of plants. Layering seems to be the common mode of producing them in St. Mi-

chael. This is done in the usual way, by bending down some of the lower shoots into a hole opened in the ground to receive them, leaving the point or end of the shoot above-ground, and confining the bent part in the hole with a hooked stick or otherwise, and well covering it with fine, rich mould, which has more or less of sand in it. The striking is much facilitated by taking a slice or two of bark off the shoot, at the part to be laid under-ground, at a bud, if possible, and making a cut half through it between the buried part and the parent stem. Both layers and cuttings may be budded or grafted to hasten the time of fruiting, or to produce a variety different from the parent tree.

CUTTINGS.—Henderson considers cuttings the quickest mode of getting [fruit-bearing?] plants, and has practiced it for 37 years past. His directions are as follows: "Take the strongest young shoots, and also a quantity of the two-year old shoots; these may be cut into lengths of from 9 to 18 inches. Take the leaves off the lowest part of each cutting to the extent of about 5 inches, allowing the leaves above that to remain untouched; then cut right across under an eye; and make a small incision in an angular direction on the bottom of the cutting. When the cuttings are thus prepared, take a pot and fill it with sand (sandy soil); size the cuttings so that the short ones may be altogether, and those that are taller in a different pot. Then, with a small dibble, plant them about five inches deep in the sand, and give them a good watering over-head, to settle the sand above them. Let them stand a day or two in a shady place, and if a frame be ready with bottom heat, plunge the pots down to the rim. Shade them well with a double mat, which may remain till they have struck root; when rooted, take the sand and the cuttings out of the pot, and plant them in single pots, in the proper compost. Plunge the pots with the young plants again into a frame, and shade them for 4 or 5 weeks, or till they are taken with the pots; when they may gradually be exposed to the light. From various experiments, I found that pieces of two year old struck quite well; and in place, therefore, of putting in cuttings six or eight inches long, I have taken off cuttings from ten inches to two feet long, and struck them with equal success. Although I at first began to put in cuttings only in the month of August, I now put them in at any season of the year, except when the plants are making young wood. By giving them a gentle bottom heat, and covering them with a hand-glass, they will generally strike root in seven weeks or two months. The citron is most easily struck, and is the freest grower; I therefore frequently strike pieces 18 inches long, and as soon as they are put into single pots, and taken with the pots, they are grafted with other sorts, which grow freely. I am not particular as to the time of striking cuttings." It may be observed that the citron tribe, like

other fruit-bearing plants raised from cuttings or layers, though they may prove very prolific trees, yet seldom grow with that vigor, and produce such large fruit, as those propagated by budding or grafting on seedling stocks.

TRAINING AND PRUNING.—Standard orange trees require very little pruning. Cut off any straggling, irregular branches, and where a vacancy appears in the head, cut back any strong free-growing shoots in the neighborhood of it, which will cause them to send forth smaller side-shoots to fill the gap. For plants against a wall or trellis, the fan manner of training is that generally adopted. In pruning these trees, it must be considered that the most useful blossoms of most sorts of citrus are produced in the form of terminating peduncles on the wood of the current year, and hence the grand object of the pruner ought to be to encourage the production of young wood in every part of the tree, by cutting out naked wood and shortening vigorous shoots where wood is wanting.

INSECTS.—In St. Michael they tar the stems occasionally to prevent injury from insects. Vegetable tar only should be used. "If insects do attack, strong lime water is as good a remedy as I know," says Shepherd, "to destroy them, which is to be thrown upon the tree with some force from a hand-engine." For want of which, it may be dashed against them from a cup or other small vessel.*†

DESIDERATA.—It may be of advantage to give the following list of what appear to be the most desirable varieties of the sweet orange, and which, if imported, would prove a very valuable addition to the fruits of the

* See Browne's Trees of America, p. 68.

1 Inquiring of the Senators from Florida as to the staples and capabilities of that State, to which both have given the attention which becomes men of their high trust and position, we learned with sorrow that the culture of the Orange otherwise so promising and profitable, had been arrested and nearly destroyed by the ravages of an insect of which an intelligent correspondent of Hon. Senator Yulee gives the following account:

ST. AUGUSTINE, Fla. Jan. 4, 1846.

Dear Sir: I have satisfied myself perfectly as to the identity of the insect. It is the *Coccus Hesperidum*. I have observed it daily since my own trees have become infested with it, and have frequently examined it with a tolerably good single magnifier. I cannot see more than one male to three or four hundred females. The males are also much smaller than the females. The males are winged, and extremely active, and can be seen running about among the females, by observing very closely. They are, however, so extremely small that the closest attention is necessary to see them at all with the unassisted sight, and then only in a bright sunlight. By means of a microscope that enlarges it to about

Colony. It is a selection from a larger list in the Penny Cyclopaedia:

"*Citrus Aurantium*, the *Sweet Orange varieties*.

"*b.*—The pear shaped orange, with elliptical, acute leaves, and great top-shaped fruit, with a deep yellow, smooth rind; a rare and curious sort, not known in the market; *it is one of the most capable of resisting cold.*

"*c.*—The orange of Nice, with ovate-acute an inch in length, the male exhibits six legs, wings, and bristles on the abdomen. My microscope not being achromatic, I cannot tell what its color is. This male is seldom observed, from its diminutive size, and when it is shown to people, appears so very unlike the scaly, torpid female, that few persons can be made to believe it to be the same insect. Those females which are too small to be seen at all by the naked eye, are seen to crawl slowly under the magnifier. The smallest that can be seen at all, appear of a reddish color.—But you solicited information concerning its introduction here; and I have been detailing, I find, the result of my observation of its appearance and habits.

I will premise that the insect is not a native of Europe, but was originally introduced there with exotic plants, from warm climates, (the East Indies or China.) It is now to be found in almost every hot-house in Europe or America, introduced with plants from one to the other.

In 1838, Robison, of Mandarin, on the St. John's, introduced the insect there, on some Mandarin (Chinese) orange trees which he received from New-York. The insect excited little apprehension at first. But in 1840 it had extended its ravages so rapidly that Robison, in the autumn of this year determined to top all his trees, in hope of thereby arresting its progress. But this had no effect whatever.*

No soil, no kind of manuring or attention to culture can arrest it. Its ravages on St. John's, where a sandy loam prevails, are as great as they are here, where a calcareous sandy soil exists. No storms or

* From this beginning it has gradually spread over the greater part of Florida.

leaves, and large, thick-skinned, rough, dark yellow, round fruit. This is considered one of the finest of the whole genus, both in regard to beauty, size, productiveness, and quality. It is a good deal cultivated about the town whose name it bears.

"*b.*—The sweet-skinned orange, with broad, taper-pointed leaves, roundish, rather ovate, heavy fruit, and a deep yellow, smooth, thick, sweet, soft rind. This is the Pomme d'Adam, or forbidden fruit of the shops of Paris. Its pulp is subacid and pleasant, and as deep a yellow as the rind, which is soft and melting like the flesh of a clingstone peach; the acidity of the pulp is agreeably mixed with sweetness, which renders the fruit extremely pleasant. This is very different from the forbidden fruit of the London shops, (which is the *citrus decumana*, the shaddock.)

"*i.*—The Mandarin orange, with flattened, rough, deep-orange fruit, and a thin rind, which separates spontaneously from the pulp. This sort has been raised in China, where its fruit is chiefly consumed in presents to the great officers of State, whence its name. It is now cultivated in Malta, where it arrives at perfection. Its singularity consists in the rind so completely separating from the pulp when quite ripe, that the latter may be shaken about in the inside. *In quality this yields to no known kind.* There are two subvarieties.

"*k.*—The Saint Michael orange, with small, round, pale-yellow, seedless fruit, having a thin rind, and an extremely sweet pulp. This, when in a state of perfection, is perhaps the most delicious of all oranges, and it is by far the most productive. Great quantities are imported from the Azores, where it appears to be exclusively cultivated as an object of trade. It is said that 20,000 of these oranges have been packed from a single tree, exclusively of the large quantity which were blown down or rejected as unfit for sale."

seasons seem to arrest its progress, until all the orange trees are destroyed. The same insect in lots where it has destroyed all the orange trees, has betaken itself to the English Joy and prickly ash.

I have scarcely room left to express myself, respectfully, but devotedly and sincerely, yours,

J. FORMAN.

Hon. D. L. YULFEE.

A PICKLE FOR ONE HUNDRED POUNDS OF BEEF—(*From the Book of the distinguished RICHARD STOCKTON of New-Jersey.*)—First put your beef for 10 hours in water, to drain out the blood; then hang it up 34 hours to dry. Dissolve in 6 gallons of warm water coarse salt so as to make the brine bear an egg; add $\frac{3}{4}$ of a pound of saltpetre, 2 quarts of molasses, 2 ounces of cayenne pepper, 1 ounce of pearl ash—dissolved in warm water; boil and skim off all the impurities; then put in the beef in this pickle, and in 4 or 5 days it will be fit for use, and continue so until April—after which, boil over the liquor; skim it after you have added some more salt, sugar, &c.

Some time ago I was at Marshfield, and better salt pork, or better salt beef. I never ate The distinguished farmer of that place—as distinguished among his neighbors for his knowledge in Agriculture as he is in the country for his legal talents—told me that the pickle of the fine salt beef and pork I was then eating was 60 years old—that is, some of the pickle of his harness cask was upward of 60 years old—as it had been in use in the Thomas family, from whom he purchased a part of his estate, (regular descendants from the May Flower,) certainly for that period of time; that spring and fall they boiled and skimmed the liquor, and retained it for use. This pickle was not very different from the above, only no pepper, and wood ashes instead of pearl ashes.

TO CORRESPONDENTS.


Our "Friend" in Richmond has put us to the trouble of looking back to see *how* it could be that we had used the phrase "*one L.—;*" and we are glad to find that he is mistaken. The language is, that a passenger in the stage answered that the farm belonged to *a Mr. L.* It is quite obvious that anything but disrespect was meant.

The Address did not come to hand. We should, doubtless, be much gratified and edified in reading it. The well-known talents of the author give assurance of that; but we are compelled to forego the publication of addresses generally, for there are as many delivered and offered as would fill the whole journal. We have been long desirous of publishing an extract, at least, from one of the ablest and most useful, in a practical view, that we have seen for many a day, by FRANKLIN MINOR, Esq. If we have published our own, it was in no spirit of vanity, but because we have taken occasion of these invitations to deliver addresses to say only what we had desired, and, with little variation of language, should have said editorially, in any event.

We have an Address, sent expressly for original publication in THE FARMERS' LIBRARY, delivered lately at Woodville, Mississippi. The style is captivating and beautiful, and we should be unaffectedly gratified in publishing as we have been in perusing it; but, after all, it is but an exhortation, in glowing and eloquent language, to the farmers of that region, to contemplate the various productions of Nature, and to learn from them to *diversify* their crops—to lessen the quantity of cotton, and to make more of other things. As a beautiful specimen of composition, the friend who sent it cannot more admire it than we do; but the question is, whether we can yield six precious pages to its insertion.

The source of our deepest and most frequent mortification is the reluctance with which we lay aside so many admirable addresses, and so much of other matter, that we would gladly spread before our readers. Several have been lately delivered in South Carolina, that we should like much to see—one especially, recommending *the culture of the olive*, and which, we suppose, will have been published in the Southern Cultivator, but it is our misfortune lately not to receive that very able paper. When we can't publish an address, we must endeavor to make extracts. Dr. Bayne's is an excellent one—but were that published it might be ascribed to improper considerations.

A JUDICIOUS PREMIUM.—The Highland and Agricultural Society of Scotland have offered a premium of a silver medal to the *best sheep-shearer*, in each of the districts in which the Society's or local premiums for sheep are in operation. There is nothing in which there is more of what is called sleight-of-hand than in sheep-shearing. The whole economy of sheep husbandry is little understood and badly followed in a great portion of the United States. How many sheep will an expert shepherd shear in a day? How would this operation be accomplished in case of very large flocks, say flocks of 10,000, which some have contemplated in Texas and elsewhere?

 We entreat our friends throughout the country to open and encourage discussion on the *rights of Agriculture, above all interests, to instruction out of the public means*. Let discussion be opened in the local papers, and memorials gotten up to the Legislatures of States—*more especially is this the duty of Agricultural Clubs and Societies and Institutes*. Now let us see whether any heed will be paid to *this* matter of *plain, obvious, and almost incalculable importance*. As we have elsewhere said, if a man's son unluckily fall and break his leg, he employs the best surgical aid to have it set right and straight. Is it not equally the duty of us all to do what we can to keep the minds of the rising generation of cultivators of the soil from all the feebleness and deformity which can be prevented by instruction in the arts and sciences that may enlighten them in the prosecution of the pursuit by which they are to *live or starve* :

THE HEREFORD COW.

It is proper to say of the portrait in this number, of Mr. CORNING'S cow, MATILDA, that it has been very faithfully copied from a painting done under his direction—and which, we think, does credit to the very meritorious artist, Mr. VAN ZANT.

It may be that the cow—a superb one of her breed—is not *made up to order*. The portrait is what it purports to be, and what all portraits should be, but what not many are—a *likeness*, and not a fancy sketch—paring off redundancies, and supplying defects, to make up something a *little better than Nature* can do.—When *she* does her part as well as she has done, almost without any defect or exception, in Mr. Corning's herd of Herefords, for ourselves we should be content to let her well alone. We consider the cow a superior animal of her breed—distinguished particularly, as to color and marks, by those which characterize that breed of cattle.

We have before intimated that, with such a resource as Mr. Corning's herd within reach, it would be folly to send for Hereford cattle to England, where they still maintain their long and sharp contest with the Short-Horns.

One secret of their being so well sustained here in their excellence, now for many years, might be stated if one could state the secret by which Mr. Sotham, like Mr. Webster, never fails to have *crops of Swedes* that would do credit to a *Norfolk English farmer*.

CHAMPION.

In the last number we gave a portrait of Mr. GRINNELL'S fine colt—CHAMPION. In the award of the premium, there was no hesitation on the score of his *personal merits*. His size, his blood, and his extraordinary performance—doing his mile in 3.5 at two years old—cleared the way of all difficulty. The Judges were judges, and well knew to what a standard a colt like him will fill up, when “of age,” and to what a horse of the *Mambrino* stock may be brought, who can do his work at such rate and in such style, when only in the gristle. Trotting stock are usually not fairly taken in hand until they are six. For performance in that gait, the stock of old *Messenger*, coming down through Mambrino, has no rival; and Champion bids fair to stand in the shoes of his world-renowned sire. Saying that, what more need be said?

Not wishing to draw on his masculine powers prematurely, his owner consents to let him pay his compliments this season to a very limited number of *good mares*, at LEVANA, Cayuga County, N. Y.

PRICES CURRENT.

[Corrected, December 23, for the Monthly Journal of Agriculture.]

| | | | | |
|-------------------------------------|-----------|---------------|---------------------------------------|--------------------------|
| ASHES—Pots, 1st sort..... | £ 100 lb. | 4 62½ @ 4 62½ | Staves, White Oak, pipe, £ M.... | 50 — @ — |
| Pearls, 1st sort, '46..... | 5 50 | a — | Staves, White Oak, hhd..... | 40 — @ — |
| BEE-SWAX—American Yellow.... | — 27 | a — 27½ | Staves, White Oak, bbl..... | 30 — @ — |
| CANDLES—Mould, Tallow.. | £ lb... | — 9½ @ 11 | Staves, Red Oak, hhd..... | 24 — @ 28 |
| Sperm, Eastern and City..... | — 26 | a — 38 | Hoops..... | 20 — @ 30 |
| COTTON—From..... | £ lb. | — 9½ @ 12½ | Scantling, Pine, Eastern..... | 15 — @ 16 25 |
| COTTON BAGGING—American.... | — 10½ | a — 13 | Scantling, Oak..... | 30 — @ 35 |
| CORDAGE—American..... | £ lb. | — 11 a — 12 | Timber, Oak..... | £ cubic foot — 20 a — 30 |
| DOMESTIC GOODS—Shirtings, £ y. | — 5 | a — 11 | Timber, White Pine..... | — 13 a — 20 |
| Sheetings..... | — 6½ | a — 15 | Timber, Georgia Yellow Pine.... | — 24 a — 28 |
| FEATHERS—American, live..... | — 25 | a — 28 | Shingles..... | £ bunch 1 75 @ 2 — |
| FLAX—American..... | — 7 | a — 8 | Shingles, Cedar, 3 feet, 1st quality. | 26 — @ — |
| FLOUR & MEAL—Genesee, £ bbl. | 5 50 | @ 5 56½ | Shingles, Cedar, 3 feet, 2d quality. | 22 — @ 24 |
| Troy..... | 5 50 | a — | Shingles, Cedar, 2 feet, 1st quality. | 17 — @ 18 |
| Michigan..... | 5 50 | a — | Shingles, Cedar, 2 feet, 2d quality. | 15 — @ 16 |
| Ohio, Flat Hoop..... | 5 50 | a — | Shingles, Cypress, 2 feet..... | 13 — @ 14 |
| Ohio, Round Hoop..... | — | a — | Shingles, Cypress..... | 28 — @ 30 |
| Ohio, via New-Orleans..... | — | a — | MUSTARD—American..... | — 16 a — 31 |
| Pennsylvania..... | — | a — | NAILS—Wrought, 6d to 20d.. | £ lb. — 10 a — 14 |
| Brandywine..... | 5 50 | a — | Cut 4d to 40d..... | — 4 a — 4½ |
| Georgetown..... | 5 50 | a — | PLASTER PARIS—£ ton..... | 2 12½ @ 2 25 |
| Baltimore City Mills..... | — | a — | PROVISIONS—Beef, Mess, £ bbl.. | 8 — @ 8 50 |
| Richmond City Mills..... | 6 75 | a 7 — | Beef, Prime..... | 6 — @ 6 50 |
| Richmond Country..... | 5 25 | a 5 37½ | Pork, Mess, Ohio..... | 10 37½ @ 10 50 |
| Alexandria, Petersburg, &c..... | 5 25 | a 5 37½ | Pork, Prime, Ohio..... | 8 25 @ 8 37½ |
| Rye Flour..... | 3 7½ | a 4 — | Lard, Ohio..... | £ lb. — 7 a — 7½ |
| Corn Meal, Jersey and Brand.... | 3 7½ | a 4 — | Hams, Pickled..... | — 6½ a — 6½ |
| Corn Meal, Brandywine..... hhd. | — | a 17 50 | Shoulders, Pickled..... | — 4½ a — 5 |
| GRAIN—Wheat, White..... | £ bush. | 1 15 a 1 20 | Sides, Pickled..... | — a — |
| Wheat, Red..... | 1 02 | a 1 08 | Beef, Smoked..... | £ lb. — 8½ a — 9 |
| Rye, Northern..... | — 84 | a — | Butter, Orange County..... | — 18 a — 19 |
| Corn, Jersey and North...(meas.) | — 78 | a — 80 | Butter, Western Dairy..... | — 13 a — 15 |
| Corn, Southern...(measure) | — | a — | Butter, Grease..... | — 6½ a — 7 |
| Corn, Southern...(weight) | — 73 | a — 74 | Cheese, in casks and boxes..... | — 6½ a — 7½ |
| Oats, Northern..... | — 38 | a — 40 | SEEDS—Clover..... | £ lb. — 6½ a — 7½ |
| Oats, Southern..... | — | a — | Timothy..... | £ tierce 11 — @ 15 — |
| HAY—North River in bales, £ 100 lb. | — 56 | a — 62½ | Flax, Roun..... | 9 — @ 9 25 |
| HEMP—American, dew-rotted, ton | 95 — | a 110 — | SOAP—N. York, Brown..... | £ lb. — 3½ a — 6 |
| " " water-rotted..... | 150 — | a 200 — | TALLOW—American Rendered.... | — 84 a — 8½ |
| HOPS—1st sort, 1846..... | — 9½ | a — 11 | TOBACCO—Virginia..... | a lb. — 13 a — 5 |
| IRON—American Pig, No 1..... | 30 — | a 32 50 | North Carolina..... | — 2 a — 4 |
| " " Common..... | 22 50 | a 25 — | Kentucky and Missouri..... | — 2 a — 6 |
| LIME—Thomaston..... | £ bbl. | — 80 a — | WOOL—Am, Saxony, Fleeced, £ lb. | — 35 a — 37½ |
| LUMBER—Boards, N.R., £ M. ft. chr. | 30 — | a 35 — | American Full Blood Merino..... | — 30 a — 32 |
| Boards, Eastern Pine..... | — | a — | American ¾ and ¾ Merino..... | — 26 a — 28 |
| Boards, Albany Pine..... | £ pce. | — 10 a — 18 | American Native and 1 Merino..... | — 22 a — 24 |
| Plank, Georgia Pine..... | £ M. ft. | 27 50 a — | Superfine, Pulled..... | — 25 a — 28 |



From portrait by H. S. Edwards, in the Illustrated London News.

HERFORD (ON, MALL, D.A.,

Six years old. The property of Messrs. H. S. Edwards, Albany, to which was awarded the first Premium at the State Fair at Auburn 1840.

See Dr. S. H. Edwards' book on the Mastiff, in Vol. 1, p. 12.



MONTHLY JOURNAL OF AGRICULTURE.

VOL. II.

FEBRUARY, 1847.

NO. 8.

CHEMISTRY AS APPLIED TO AGRICULTURE.

THE OBLIGATION OF GOVERNMENTS TO PROMOTE SCHOLASTIC INSTRUCTION IN THE ART OF HUSBANDRY.

THERE would, we must confess, be no violence in the presumption that we had stolen a leaf from the book of the esteemed author of the following Report, when we very hastily penned, for the last number of *THE FARMERS' LIBRARY*, the following query : " Ought not every State, or Agricultural Society or Institute, that possesses the means of doing it, to *employ a competent chemist*, whose duty it should be, for the benefit of its Agriculture, to analyze such soils and substances as might be sent to him for that purpose from the different parts of the State ? Could any more useful office be well established ? "

Coincident as are our views with Mr. NAILL's, and gratified as we are to find them so, it was only the coincidence of different minds, animated by the same spirit of devotion to the same object. It was only since our remarks were in type, that a chance, fortunately for us, brought us acquainted with Mr. N. ; and to learn, incidentally, that as far back as *March, 1840*, exactly at the time that we were called upon to take charge of an important Bureau of the public service at Washington—and so had our attention partially diverted, but never entirely withdrawn from the interests of Agriculture—he, as Chairman of the Committee of Agriculture in the Senate of Maryland, had actually presented to that body the following Report, and Bill in conformity with it, for the establishment of just such an office—one that, with some modifications, every enlightened friend of Agriculture must see could not fail to be attended with the most important benefits to that branch of the State's industry :

HOUSE OF DELEGATES, March 5, 1840.

Mr. NAILL, from the Committee on Agriculture, delivered the following Report : —

The Committee on Agriculture, taking into consideration the deranged condition of the finances of the State, and the difficulties into which she has been thrown by her system of internal improvements, beg leave to submit the following Report :

Your Committee, regarding the agricultural product of the State as the great basis upon which all her various interests mainly

depend, and as almost the only source from which returning prosperity may be expected to flow, have been deeply impressed with the importance of the subject and induced to inquire whether anything could be done to augment the agricultural product of the State. It is admitted, on all hands, they believe, that knowledge is power ; consequently, if means be adopted to extend knowledge, an increase of power will follow. Thus, then, if the mind of the State be cultivated, will it not lead to the better cultivation of the soil ? And who can estimate the mighty results that may be

made to flow from these two great primary sources of wealth, the mind of the State and the soil of the State! If they remain uncultivated, must not the wealth and power of the State remain stationary? It is appalling to reflect upon the amount of capital, enterprise and population that have left the State in the last thirty years. Can it be believed that these masses of citizens would have left the places of their nativity, and all those hallowed recollections, and foregone the advantages of an Atlantic market, if they had been taught to appreciate the value of *marl and lime* in the renovation of exhausted lands? Your Committee think that it cannot, and entertain the belief that when the properties and effects of those agents are more generally understood by the farmer, and their application regulated by analysis, universal confidence in their use will be established and uniform success attend their application. In proportion as the means of rendering home agreeable and business profitable would be increased, emigration would subside, and capital and population become fixed.

Your Committee propose, by the accompanying bill, to take a small pittance from the coffers of the State to further this great object, assuring the Legislature, and their fellow-citizens throughout the State, that it has been prompted by a high sense of duty, and under a conviction that it will be returned many thousand fold, not only in the increased products of Agriculture and its influence upon all other business, but in awakening a thirst for, and disseminating knowledge among our people, that great palladium of our liberty and security.

All of which is respectfully submitted.

From the Committee. D. W. NAILL.

Mr. NAILL, from the Committee on Agriculture, reported a bill entitled "An Act to

provide for the appointment of an Agricultural Chemist for the State of Maryland."

An Act to provide for the appointment of an Agricultural Chemist for the State of Maryland.

SECTION 1. *Be it enacted by the General Assembly of Maryland*, That the Governor, by and with the advice and consent of the Senate, shall annually, hereafter, appoint and commission a person of talents, integrity and suitable scientific attainments, as Agricultural Chemist of the State of Maryland; and the said officer shall receive in consideration of the faithful performance of his respective duties, an annual salary of — dollars, to be paid as the salaries of the other civil officers of the State are or may be directed to be paid.

SEC. 2. *And be it enacted*, That the State be, and the same is, hereby divided into three Districts, viz.: The First gubernatorial District shall constitute the First District; the Third gubernatorial District shall constitute the Second District; and the remaining gubernatorial District the Third District; and that it shall be the duty of the said officer to visit the First District during the year 1841, the Second during the year 1842, and the Third during the year 1843.

SEC. 3. *And be it enacted*, That it shall be the duty of the Agricultural Chemist, to be appointed as aforesaid, to deliver a course of public Lectures on Agricultural Chemistry in each County embraced within each of the said gubernatorial Districts as aforesaid, and analyze not less than three different soils in each County in each year, and shall also, as far as time will permit, visit such places where valuable marls or minerals are believed to be, and examine and report the same to the Legislature, together with all his proceedings during each year.

Without stopping to discuss the details of a proposition so honorable in its general features to the judgment and forecast of its author, we feel called upon to record it in this Journal, on the principle that the enterprising pioneer blazes certain trees in his progress through the wilderness, for the benefit of those who may come after him. Notwithstanding the apathy that has so long pervaded the cultivators of the soil as to their claim on the Government and the advantages to be derived from having the lights of science reflected on the course of the plow, the time may yet come when this movement of Mr. Naill may be looked back to and regarded with something of that grateful reverence with which we view the spots where our hardy ancestors first opened settlements and kindled the fires of civilization in a land of savages. Even now may we not ask, could stronger proof be adduced of the supineness of the agricultural community—of their habit of overrating all other concerns and depreciating their own—than is to be found in the coldness with which this enlightened proposition seems to have been received, and the quick oblivion into which it had been allowed to fall? Yes, without meaning any flattery to the author, when we consider his previously retired mode of life and limited opportunities, and the almost total absence of all sympathy and encouragement from the community or the press, we may truly call it an enlightened proposition, much, it seems, in advance

of public sentiment and the circumstances of the times and the country. But let us at least hope that the day will come—we trust it is not far distant—when those who should have lent a joyful countenance to at least this one legislative movement for the benefit of those who constitute so large a majority of the people of the State, will awaken to a sense of that self-respect, failing in which men need never hope to be respected by others. Where—how employed, has been *the press* of the State, that it did not hail and encourage this one public effort to provide for her greatest interest, that augmented power and increased prosperity which always flow from augmented knowledge? Alas! the sympathies of the press of our country are almost universally allied to and dependent upon other branches of industry. Look at the buoys that have been anchored out, the light-houses that have been built, the breakwaters constructed, the banks incorporated, the hospitals erected, the schools and academies supported, surgeons and chaplains provided, and the vast amount of expenditure bestowed for enlightening, protecting, and invigorating commercial, and warlike, and all other particular classes and pursuits, while Agriculture, which supports them all, is left to grope its way in the dark, like a blind giant, and is only not ridden down and killed right out because then these other classes would infallibly perish.

Agriculture, and the various classes that subsist on the fruits of agricultural industry, may be likened to a great sow, with a large litter of pigs. If you would have them fatten and grow apace, *she* must be well fed and cared for; but if she has not sense enough to know where to find her sustenance, and is too lazy to hunt for it, the litter that tug at her sides, caring only for themselves, will suck out her very vitals.

As to the advantage of special instruction in Agriculture, it is only when men have the hardihood or stupidity to maintain that ignorance gives efficiency to labor, and that the short-sighted man is best able to provide for the future, that they will come to deny that the cultivation of the earth will be more successful and productive in proportion as the youth of a country is reared in a knowledge of the sciences that explain all the phenomena of animal and vegetable growth, the principles involved in them, and the laws by which they are regulated. This being once admitted, and all that the friends of agricultural instruction contend for follows of course. If Government has any power to protect, or what is the same thing, to favor a particular class—as the military, for instance—by boarding and educating them at the public expense—being virtually at the expense of the landed interest—it surely ought to have the power to let that interest appropriate some of its own means to the purpose of self-enlightenment in the principles of its own pursuit. And which, let us ask, is the more useful appropriation of the public treasure in this republican country—that which should be applied to diffuse among farmers the mathematical principles and the knowledge of engineering or of chemistry, that would enable them to construct a road, or a bridge, or a canal, or to build or understand the mechanism of a threshing-machine, or to analyze mineral or vegetable substances in a manner to determine their fertilizing or nutritive qualities—or that appropriation of public money which should be employed to teach our youth the art of constructing a gun-carriage, or how to make a bomb-shell or a rocket? We don't ask, by the knowledge and use of which does a man gain the most *cclat* or the highest pay, or which will the more readily insure him a place for his son in the Army or the Navy, or the comforts of a hospital for himself, or a pension for his wife? We ask, which of these appropriations would most conduce to *the substantial interests of those who make*

the laws and pay the taxes? Very well do we know that if Mr. NAILL, for example, had himself the means of carrying out his patriotic conceptions and designs for the benefit of Agriculture, until, by increased knowledge of all the laws on which its productiveness depends, its fruits should be quadrupled from a given amount of land or labor, he would yet, if overtaken by sickness and misfortune, be left by the people and the Government of this republican country, to perish in a common jail; while honors and rewards without measure would be heaped upon any man who should come reeking from the battle-field, and whose only merit should be that of having shed the blood of—"the enemies of his country"!!!

Can any man endowed with the high, the—as we regard it—almost sacred trust of legislation, the most honorable and responsible that any man can fill, unless it be that of instructor of youth—can any man so endowed with power to influence the public weal, need any argument, at this time of day, to convince him how absolutely and directly the success and the honor of Agriculture are connected with and depend upon those who follow it, or at least those who direct its operations, being trained up in familiarity with those sciences that enable us to detect the nature of various soils, and the constituents that compose not them merely, but all the plants we cultivate, and all the manures which the most ignorant acknowledge and apply, though without knowing why, to promote their growth? Just as well might it be said that a knowledge of anatomy is not essential to the surgeon—that the iron-master may be ignorant of the qualities of ores, and the art of smelting—or the dyer of his coloring matters, and how to fix them. We don't speak of or to the common farm-laborer any more than of the journeyman dyer. Both may be as ignorant as an ass, and, like an ass, be employed in the lowest drudgery, content to labor and be fed from day to day.—What we write, such as it is, we intend for gentlemen, and gentlemen's sons; and by these we mean men who pride themselves and covet the distinction that is to be found, not in money nor in fine clothes, but in the highest possession they can reach of the qualities that distinguish the man from the brute—the *intellectual farmer* from the *unintellectual operative*. It is knowledge that humanizes, civilizes, elevates and adorns the human character. Ignorance brutalizes and degrades—makes men tyrannical and cruel, yet cowardly and fond of blood. We go, therefore, above all things, for knowledge; and, first of all, for knowledge of the very sort that makes a man *most skillful and prosperous in the very business by which he is to support himself and family*, without which he must be miserable. For the sea, he who wishes not to live and die a common sailor, learns the art of navigation; he gets acquainted with the form and magnitude of the earth—procures his charts of the coasts, and maps of the harbors he may have occasion to visit. He must understand the use of instruments by which the direction in which the ship is steered, and the distance she sails, are ascertained from day to day; and be able to deduce, from the data supplied by such instruments, the situation of his ship at any time, and to find the direction and distance of any place to which she is to be taken. Observe the elegance and beauty of the art which forms our splendid flint-glass out of such coarse, mean materials as silica, potash, and oxide of lead. Now are these arts, does the reader suppose, to be acquired without study? without exercise of the mind? without bringing into play the noble faculties that lift us above the beasts of the field, and assimilate us to our Creator in the only way that it can be done without an insult to Infinite perfection? And will the farmer, the practitioner of the greatest of all arts—he who with soil, and soda, and lime, and potash, and wa-

ter, and various materials, *manufactures* the very *staff of life*—will be the first to degrade his own employment, to disown its connection with science, to stultify himself, and place on the same level of brute force the occupation of his sons and his oxen?

The views which present themselves to illustrate the immense auxiliary power of science in the prosecution of agricultural industry, and the obligation of those who represent the landed interest to provide for the instruction of the sons of their constituents in a better knowledge of the principles on which all material advancement in Agriculture must depend, are really so obvious, and we might say innumerable, that one hardly knows which to select by way of argument—if, indeed, it be practicable to bring oneself to recognize the necessity of adducing any argument in such a case. It is not, we apprehend, that public men—legislators—representatives, so called, of the landed interest, but really more attentive and alive to all others than to that—it is not, we apprehend, that they do not see how much the whole country would be elevated in character, and Agriculture be made to prosper, by express instruction in all the sciences that appertain to it. The difficulty, it may be feared, is rather with the farmers themselves. Their representatives perceive their lukewarmness, in the fact that they never call them to account for the enormous sums levied on the country for protection and instruction to other classes, while they and theirs are utterly neglected. What inference can they draw when they see the Legislature of one State refusing to expend a few hundred dollars, by way of commencing a system of agricultural instruction, as in this case of Mr. NAILL's proposition for a course of lectures on Agricultural Chemistry; while sister and contiguous States, equally sensitive and slow in matters of expenditure for agricultural purposes, will yet by unanimous vote give many thousand dollars to fit out a *General Government* regiment for warlike service in a far distant country! While men betray insensibility to their own welfare, how can they expect their representatives to be mindful of it? But are there not hopeful signs of a change in public sentiment? If farmers possessed the same benefit of the *power of the press* which is enjoyed by merchants and the town classes, that change would now come over the country almost as fast as one of Espy's great storms. Then we should have educated every year, at the public expense, men prepared for diffusing a knowledge of the principles of animal and vegetable chemistry, of mineralogy, botany, road-making and bridge-building, and agricultural engineering, and architecture—in number at least equal to the number that are fed, clothed, and educated, and commissioned, and paid for life, at the expense principally of farmers, for practicing with more deadly efficiency all the arts of war. Look at the advantages, the power, that science has conferred on the civilized, over the savage warrior!—When has the former appeared that the latter has not given way, as snow melts away under the meridian sun? And can it be within the scheme of a beneficent God that science, the crowning glory of man's nature, should do less to push forward the great conservative art of cultivation, the source of every blessing, than it does for the bloody art of human slaughter? No! the very thought is impious!

But who can hope that this glorious direction will ever be given to any portion of the public means, until the holders and the cultivators of the soil shall make such demonstrations as will convince legislators that they know their rights, and, "knowing, dare maintain them"?

We have spoken of the want of sympathy on the part of the press (which so

powerfully influences public men) with rural interests. Can anything better prove the want of concert and sympathy on the part of the agriculturists themselves? For, as to numbers, take away Baltimore and New-Orleans, in the slaveholding States, and not more than one in thirty lives in towns, and even with the inhabitants of those cities, not one-sixteenth. Yet look at the spirit of legislation in all those States. In what proportion does it lean toward, or is it influenced by, *regard for the agricultural class?*

Let us see, for example, what the Agricultural Committees of the Legislatures now in session will venture even to propose toward agricultural education; and let us see *what will be granted!*

There are those who may suppose that in these hasty remarks, for instance, there may be something worthy of the consideration of the public and of public men. If so, they would naturally like to see them more widely spread; but could they get any newspaper in any of these States to give them, or anything like them, circulation? *Nous verrons.* The Editors of such papers too well understand their business to batter the face of their type in care for men who don't care for themselves.

But, as to the immediate connection between practical Agriculture and that science for which Mr. NAILL would diffuse some taste and some knowledge in Maryland, the reader is respectfully referred to the observations presented in the following chapter. If time allowed, they might be amplified and extended, and will be as opportunity may offer.

SUGGESTIONS FOR SOME REFORM IN THE COURSE OF INSTRUCTION IN COUNTRY SCHOOLS.

Let us endeavor to exemplify, in the simplest way that is possible, some of the facts and principles immediately connected with practical Agriculture, and which every boy who is to live by terraculture ought to learn at school first and before all else, as fast as he has capacity to comprehend them—yes, as invariably and for the same reason that a military student at West Point is taught, *by the Government*, the principles of fortification, gunnery, or any other branch of the military art. Ask one of these students what is *gunpowder*, and he will tell you that it is a compound of about 78 parts of saltpetre, 12 of charcoal, and 10 of sulphur; and then he will go on, for *his education* has taught him to know that its force of explosion is the consequence of the sudden and abundant production of the gaseous matter expanded by the intense heat resulting from the action of the combustibles upon the nitre; that the gases evolved are chiefly carbonic oxide, carbonic acid, nitrogen, and sulphurous acid; and that their volume exceeds two thousand times the bulk of the powder. And so he can proceed to tell you the nature of, and the difference between, all these gases. This same student, boarded, paid and educated at the public expense, will tell you at once that, in the art of gunnery, the object is to hit a proposed mark, at any distance, within the range of the shot; and then he will go on to explain that, to accomplish this purpose, it is necessary to know the nature of the path which the ball describes in the air with a given initial velocity, the quantity of powder necessary to produce that velocity, and the elevation that must be given to the gun in order to counteract the effect of gravity and the resistance of the air on the ball in its flight; and all these calculations he is taught to make. In short, he is thoroughly instructed, not only in all the branches of the military art, but in botany, mineralogy and chemistry, mining, &c., some of which are as useful and

necessary to the farmer as to the soldier. But the officer, naval or military, not only gets his four years' instruction, at the expense of the landed interest in the proportion that that interest is the most numerous and contributes most to all Government expenses, but he is paid besides, and finally insured to receive a commission and good pay for life. Now we are not finding any fault with this, but what we marvel at is that the landed interest, that class of the community on which the burden of Government chiefly falls, should require no appropriation, no assistance, no provision for instruction, also, out of the public funds, for their own sons, in their own profession. We don't say provision for board, and clothes, and pay, and life commissions, and hospitals, and pensions, with the run of the Army and Navy for their sons, but an appropriation *simply for instruction*.

We have barely hinted at the sort of instruction received at the Government schools, by the privileged classes. Now let us see how, in what branches, the rising generation destined to be cultivators of the soil are instructed. Take one of these, and, for example, instead of asking him what is gunpowder, ask an elementary question appropriate to *his* destined pursuit. Ask what is *soil*? and ten to one but he answers, soil is earth, and earth is soil! Yet, if taught in the matter and manner that every farmer's son should be taught, by men properly prepared, and qualified, and paid, as Professors are qualified at our military schools, he would not be fourteen years old before he would answer that *soil* is the primitive earth in a state of mixture with organized matter fit for the growth of plants; that the surface of the earth, in every country on which plants have grown and decayed, is properly denominated *soil*; while the earth at a foot or more beneath the surface, commonly called *subsoil*, is comparatively without organized matter, and is therefore properly denominated earth, clay, sand, gravel, lime, rocks, or stones, as the case may be.

If agriculturists were alive to their own interests and rights, animated by a proper sense of self-respect, and conscious of their power, as other classes are—enjoying, as they do, the means of complete control over that *greatest of all earthly concerns, the education of the youth of a country*—they would see that public instruction in the art and principles of tillage and husbandry was at least as thorough and complete, and as much out of the public treasure, as in any other art or profession. In that case, no boy, designed to be a farmer, would leave his school, and enter upon his trade, without having learned, for example, the number of elements which are found existing in plants and animals. Of these he would know how many are supplied by the atmosphere and by water (as carbon, hydrogen, nitrogen and oxygen), and that these are they which constitute by far the greatest proportion of every organic substance. He would be taught what these gases are, and what uses Nature designed them to perform; and again, he would learn, *at school*, that the remaining twelve elements, though usually present in much smaller quantity, are no less essential to the well-being of the plant, and must be obtained *from the soil* on which the plant grows. To yield all these other elements, he would of course learn that the soil must be of a complex nature. If it do not naturally contain them, or if it contain them in not sufficient quantity or proportion, he would learn, before he entered on his profession, that they must be supplied by the farmer, or he must be content to have little or no return for his labor. He need not be, nor should any country school-boy reach, 14 years of age, before he should have been taught that each crop, removing from the soil certain quantities of these elements, making a part of and indispensable

to the existence of the oats, barley, wheat, corn, tobacco, potatoes, flax, or whatever the crop may be, *must diminish in that proportion the power of the soil to produce future crops*; and thus he would learn his first great lesson, to wit: that to sustain the fertility of his land, and insure himself a remunerating return for the labor and capital employed in its cultivation, the exhausting effects of vegetation *must be compensated by suitable additions from some source*. A well-qualified, well-paid, competent instructor—such as, before many years, ought to be in the management of every country school—and might be, if legislators would do their duty—would soon make any boy of common capacity understand that, in the words of an able writer, in those few and simple propositions is contained the clue to the most refined and successful systems of Agriculture; and that the objects of the philosophical agriculturist, as well as the most effective means of practically advancing husbandry, consist in—

1. *Studying the composition of the Soil;*
2. *Studying the action of Plants upon it.*

But surely we should be wasting time in arguing farther that the farmer needs instruction in the various branches of knowledge that are allied to his pursuit, and that such instruction will give additional efficacy and profit to his labors, as much as it does to that of any other profession or employment. Instead of this, what have we taught to all the youth of the country, *until* they are singled out and favored, by the pleasure of a single individual, with a warrant that insures them a highly finished education and support for life, or until they are designated for one of the so-called *learned professions*? Why, generally, the *ultima thule* is, to be taught to *read and write*, and *there*, it is at this point, the education of the great mass of boys stops—mistaking that which constitutes only the *means* of acquiring knowledge for knowledge itself. Will somebody give us a list of the books generally employed now in the country schools? In our own time, in Maryland, they were—*Dilworth's Spelling Book*, the *New and Old Testament*, and *Scott's Lessons* or the *English Reader*. High prognostications were ventured in those days in favor of the promising lad who could come before an admiring Fourth of July audience, and pronounce with ease and confidence, "*To be or not to be*," "*My voice is still for war*," "*My name is Norval*," or "*All the world's a stage*,"—neither pupil nor master, perhaps, understanding anything of the men or the times for which these speeches *had been written*. To get by heart these fictitious orations of Pagan orators, and to pronounce them with the requisite degree of self-confidence and flippancy, was, and for aught we know is still, thought to be a sure sign that the boy would rise to great eminence not as a planter or farmer, (for the idea is that any dunce has sense enough for *that*!) but as a *doctor* or a *lawyer*! And the parents—good, easy people—saw in their applauded son another Patrick Henry, or Pinckney, or Rush, or Wistar, at least. And this was and is yet called *education for an agriculturist*!

Now in lieu of the speeches of Cicero against Verres, or Adherbal's to the Roman Senate, or Antony's oration over the dead body of Cæsar, we propose what will be found in the two following chapters as Fourth of July recitations, at an exhibition such as we remember in our youthful and joyous days in the country, when, with our dear school-companions, the Grays, the Wilkinsons, the Chews, the Reynolds and the Dukes, each in his turn, dressed out in his holiday clothes, we stepped out on the platform, under one of those fragrant, sweet-smelling, rude, rustic arbors, recently shaded with the fresh boughs of the chestnut and the beech. We only wish we had room for a few more of these *agricultural speeches*; but,

one of these days, we will arrange a series of them from the various branches of agricultural literature—ay, for *Agriculture has its literature*.

We beg pardon of the reader for dwelling so long on one topic, and promise not soon to offend in like manner again. But the fact is that we are so thoroughly convinced that almost all wide-spread, enduring and honorable improvement for Agriculture now lies in that direction, that our feelings run away, perhaps, with our judgment, so that we are half persuaded that it would even be not unbecoming in our *pulpit orators* to pronounce an occasional discourse on the duties and occupations of rural life, the high accomplishments that properly belong to it, and its tendency to foster sentiments of benevolence toward every living thing, and reverence for the great Creator of all.

Self-love thus pushed to social, to divine,
Gives thee to make thy neighbor's blessing thine.
Is this too little for the boundless heart?
Extend it—let thy enemies have part:
Grasp the whole worlds of reason, life and sense
In one close system of benevolence:
Happier as kinder, in what'er decree,
And light of bliss but light of charity.

And now for our recitations, which we take from the works and materials supplied by able writers, from whom we are making up THE FARMERS' LIBRARY.

SOIL :

ITS NATURE AND ITS OFFICES.

THE soil is formed by the decomposition of the minerals, of which the crust of the globe consists. The water which flows over the surface is absorbed into the pores and fissures of the rocks; and in winter, on freezing, it expands with such irresistible force as to crumble down even the materials of the densest and hardest stone. The pulverulent or gravelly material so afforded, is carried down by rains or floods to the lower grounds, and spreading over the more level country forms the cultivable soil. Independent of the mechanical action of water, the constitution of numerous rocks is such as to cause their gradual decomposition by its chemical action, as in the case of felspar and other minerals; and by the direct action of the atmosphere, all rocks which contain protoxide of iron very rapidly decompose and crumble down. Such being the origin of the soil, its constitution will be easily understood to depend on that of the rock from which it has been formed; and as on this constitution its fertility or its power of supplying plants with the materials they require for their growth, mainly depends, it will be seen that the agricultural capabilities of a country are immediately connected with, and dependent on, its geological character. A district of which the rock is simple in constitution cannot furnish a fertile soil. A pure quartz rock, or a pure limestone, could only furnish from its soil to plants, lime or silica, and they could hence languish for want of other equally important elements. The edges of a geological district, where various rocks are in contact, will, therefore, always be more fertile as to soil than its interior, and the more numerous the rocks in the neighborhood,

and the greater the diversity in their mineral character, the more complex will be the soil furnished by their decomposition, and by its power of furnishing the elements of growth to different kinds of plants, the greater will be the range and energy of its fertility. * * *

The office of the soil is not merely to afford such chemical elements as the constitution of the plant requires, but also, and what, in an agricultural point of view, is nearly of as great importance, to afford a mechanical support to the plant during its existence. This support must be consonant to the habits and structure of the plant, and hence is the special classification of soils, as adapted for the cultivation of various kinds of crops, quite independent so far of their chemical composition. Thus if we take a tenacious clay, which, when dry, becomes hard and solid, and when wet forms an impervious paste, it is evident that plants which either required to extend delicate roots to a distance, or to generate a single root of considerable bulk, could not grow there in a healthy manner; while a light and very porous soil would be adapted naturally for such crops. On the other hand, a plant of which but little stretches under ground, the stem and other portions presenting a considerable mass and surface to the air, would find in a tenacious clay a sure anchorage and support against the effects of the wind and rain. It is thus that wheat and turnip soils are almost synonymous with stiff and adhesive clays on the one hand, light and friable loams upon the other, and similar instances of the mechanical adaptation of soils to agricultural practices will have occurred in the experience of every practical farmer.

It is not merely, however, in this mechan-

ical point of view, that the physical properties of the soil become important, but also, and indeed especially, as affecting the condition of drainage of the ground. The greater or less dryness of a soil influences powerfully the nature of the vegetation it tends to nourish. The plants of a marsh differ from those of a dry upland, not merely in greater or less abundance or luxuriance, but in nature and in organization. The plant which is naturally formed for dry ground will no more flourish in a wet situation than an animal, inhabitant of the land or air, can seek its subsistence, and live habitually under water. It is, therefore, of vital importance to Agriculture, that all superfluous water should be as rapidly as possible removed. Its presence not merely affects the character of the natural vegetation, and renders the soil unfit for the cultivation of plants which belong to a dry situation, but, what is even more practical in its consequences, it retards the progress of vegetation in a very material degree, by preventing the rays of the sun from warming the substance of the soil. A certain moderate heat is in-

dispensable to vegetation; an increase of heat, provided it did not exceed certain bounds, augments its rapidity and force in a remarkable degree, and the constitution of ordinary soil, by its dark color and rugged, dull aspect, is precisely such as to absorb the heat of the sun with most effect, so as to advance the vegetation on its surface; but if the soil be sensibly wet, no heating effect can take place, all the warmth will be absorbed in producing evaporation of water from the surface, and rather, as one may verify by holding a wet band in the air, even before the sun, an impression of greater cold will be produced. Long experience as to the result has even fixed, in ordinary language, the word *cold* as expressing the imperfection of such soils. The remedying of this evil, as of the former one consists in relieving the soil from the excess of water which lies upon it, which is to be effected by attending to the general drainage of the district, and by lessening the retentive quality of the individual soil, where such is economically practicable.

ROTATIONS.

RELATION OF GRAIN CROPS AND GREEN CROPS—AMOUNT OF FOOD PRODUCED BY VARIOUS SYSTEMS OF CULTURE—INFLUENCE OF DIFFERENT CULTURES IN THE EXHAUSTION OR AMELIORATION OF THE SOIL.

THERE is, however, another mode of restoring fertility which is of practical importance, as it has led to the greatest of all improvements in husbandry, the *rotation of crops*. A soil which has become exhausted becomes restored by lying at rest for a certain time, particularly if it be well broken up and fresh surfaces be exposed to the action of the atmosphere; in fact, then, by the decomposition of the mineral masses which the soil contains, a fresh soil is produced. The organic remains of the former crops become also rotted, and assume a form suited for the nutrition of young plants, and thus after a season's following, still more after lying out of cultivation for some years, the soil resumes a very considerable degree of fertility. But it is evident that this process entails considerable loss by the land being so long idle, and it becomes of great importance to the farmer to make some use of the land while this process of regeneration is going on. This is actually done by changing from one kind of culture to another; while the land is recovering from the effects of one plant it is capable of sustaining a plant which does not act upon it in the same way, and after this a third, differ-

ently exhausting from either of the others, will give a *course* of rotation of three years, during any two of which the ground is recovering from the exhausting action of the plant grown during the third. I take this only as an example, for it is found that three years is too short a term to be of much practical utility.

In selecting the plants adapted for such a rotation, we must be guided by their chemical composition, and by their mode of growth. The results of both, however, lead to the same conclusion. In addition to those elements which are common to all plants used as food, certain plants are remarkable for the great quantity of silica they take from the soil—such are the grasses and corn plants; certain others for the potash they take up—such are turnips, the beet, the potato; others, again, for the quantity of lime—as the pea, vetch, clover, tobacco, &c. Such are the kinds of plants that should succeed each other in a rotation, and the proportionate action of each class may be judged from the following table derived from Liebig's investigations. From a space of land of 2·47 acres, he found there were taken up by

| CROP. | Alkaline Salts. | Salts of Lime and Magnesia | Silica. |
|--------------------------------------|-----------------|----------------------------|----------|
| A crop of wheat..... | 120½ lbs. | 78½ lbs. | 260 lbs. |
| A crop of peas..... | 198½ | 37½ | 46 |
| A crop of beet without the leaves... | 361 | 37½ | 46 |

The quantity of phosphates taken up by these crops are—

Peas...117 lbs. Wheat...112 lbs. Beet...37½ lbs.
(739)

The reason of the beet taking so little phosphoric acid is, that it is not allowed to form its seed, and in all plants it is in the

seed that the phosphates are principally deposited.

From these numbers it is evident, that on such a field, if by the gradual decomposition of its soil it could furnish but 200 lbs. of alkaline salts, and 200 lbs. of lime and magnesia salts each year, we would grow upon it but half the proper crop of beet, for a full crops would require 360 lbs. of alkaline salts, and also only a half crop of peas, for the full crops would require 371 lbs. of lime and magnesia salts. The continuous culture of either plant would, therefore, be most unprofitable and injurious, but if we cultivated beet one year and peas the other, the soil would have two years to prepare the materials which each crop would require to take up in one. There would be available 400 lbs. of each kind of salts, and thus so far from exhaustion, there should be a surplus steadily increasing the fertility and augmenting the produce of the soil.

As it is seen in the above table that the quantity of alkaline and earthy salts taken up by the corn crop (wheat) is so much less than required for the other kinds of plants, and that the principal demand of the corn crop on the soil is for silica, of which we may consider it certain that no soil is in danger of being exhausted, it might appear natural to conclude that the corn crop should be at least detrimental to the ground, while it is well known to practical agriculturists that white or corn crops are among the most exhausting. Their injurious action on the soil is, however, not so much due to the inorganic materials they take up as to the nitrogen, for which

element they are altogether dependent on the soil, while other kinds of plants act upon the atmosphere, absorbing nitrogen, and actually serving rather to enrich the soil upon which they grow, than in any degree to impoverish it. This is in fact what constitutes the remarkable relation between the *white crops* and *green crops* as members of a rotation. The former exhausting the soil of nitrogen, the other fixing in the soil nitrogen derived from the air, and thus preparing for the nutrition of the corn crops that may succeed it.

The complete illustration of the principle is due to Boussingault, who has established it as well by experiments on individual plants in the laboratory as by the operations of an extensive farm. Thus on growing corn in artificial soil deprived of nitrogen, it was found that the plant, when arrived at its full maturity, contained only the nitrogen that had originally existed in the seed. On the other hand, on growing peas in the same way, the quantity of nitrogen in the mature plant was found to be much greater than had been in the seed, and for this there was no other source than the atmosphere. The following tables will show how fully this result is borne out on the large scale.

In a three years' cultivation of two successive crops of wheat manured and then a year of fallow, the produce was 3,318 kilogrammes of wheat, and 7,500 kilos. straw per hectare, from 30,000 kilos. of manure. Now taking these dry, the following table shows their composition and the relation of their constituents:

| CONSTITUENTS. | Weight dry. | Carbon. | Hydrogen. | Oxygen. | Nitrogen. | Ashes. |
|------------------|-------------|---------|-----------|---------|-----------|--------|
| Wheat | 2836 | 1037.4 | 164.5 | 1230.8 | 65.2 | 68.1 |
| Straw | 5550 | 2686.2 | 294.2 | 2159.0 | 22.2 | 388.5 |
| Sum | 8386 | 3093.6 | 458.7 | 3389.8 | 87.4 | 456.6 |
| Manure..... | 4140 | 1482.1 | 173.9 | 1068.1 | 82.8 | 1333.1 |
| Difference | +4246 | +2511.5 | +284.8 | +2321.7 | +4.6 | -876.5 |

It is here quite evident that the crop contained only the nitrogen of the manure, as the difference 4.6 is so slight as to be within the unavoidable errors of experiment in such cases. On the other hand, the carbon of the crop is nearly treble that of the manure, verifying in an admirable manner, the atmospheric origin of the carbon of plants, to which I have already alluded. Hydrogen and oxygen were also gained abundantly,

and almost exactly in the proportions to form water.

In contradistinction to this corn culture may be placed the results of the continued growth of Lucern for five years, followed by a crop of wheat, all at the expense of 41,000 kilos. of farm-yard manure per hectare, put out on the land at the commencement of the period. These results were published by M. Crud, an eminent agriculturist.

| CULTURES. | Produce per hectare | Contents in nitrogen |
|--|---------------------|----------------------|
| Lucern dry, 1st year..... | 3,360 kilos. | 79 kilos. |
| " 2d " | 10,080 " | 237 " |
| " 3d " | 12,500 " | 294 " |
| " 4th " | 10,080 " | 237 " |
| " 5th " | 8,000 " | 188 " |
| Wheat.....6th " | 1,580 " | 31 " |
| Straw | 3,976 " | 12 " |
| Total nitrogen | | 1078 |
| Manure employed contained of nitrogen..... | | 224 kilos. |
| Gain in nitrogen | | 854 |

Or for the five years of Lucern, 171 kilos. per year, as the wheat of the last year did not take any from the atmosphere.

Now as the residues of these green crops which remain in the soil, contain a corresponding quantity of nitrogen, they are the means of transferring to it such portions of that element as serve, if not fully to sustain its fertility, at least prevent the exhausting action of the white crops from being so soon or so severely felt. This is still more fully carried into effect when these crops, or the last growth of them, in place of being consumed, are plowed into the soil, where they

act as the best form of manure, their fresh and juicy structure facilitating their decomposition, and their composition being such as to provide almost every element subsequently required.

The substitution of these plants as sources of food for the animals of the farm, for the common, or, as they are called, the natural grasses, has been one of the most important improvements in husbandry. The following table, which is collected from the best authorities, exhibits the quantity of actual nutritious material which is usually derived from an acre of land:

| Crop. | Weight. | Starch and Sugar. | Gluten. | Oil. | Total. |
|-----------------|-----------|-------------------|---------|------|--------|
| Wheat | 1500 lbs. | 825 lbs. | 185 | 45 | 1055 |
| Oats | 1700 " | 850 | 230 | 95 | 1175 |
| Peas | 1600 " | 800 | 380 | 45 | 1225 |
| Potatoes | 9 tons. | 3427 | 604 | 45 | 4076 |
| Turnips | 20 " | 4500 | 540 | 45 | 5040 |
| Carrots | 25 " | 5600 | 1120 | 200 | 6920 |
| Meadow hay..... | 1½ " | 1360 | 240 | 120 | 1720 |
| Clover hay..... | 2 " | 1800 | 420 | 180 | 2400 |

It is here seen that turnips and carrots yield from five to seven times the actual quantity of food that the corn crops give, also that potatoes and clover yield twice as much, and as it should be always the object of the farmer to do as much as possible in a given time, on a given space of ground, he should fix his attention on those systems of culture which thus produce the greatest quantity of food, and by the least exhaustion of the soil.

Practical experience bears out fully the principles I have here endeavored to explain. The Board of Agriculture in England directed special inquiries as to this point, and the result led to the general conclusion, that one year of tares, rape, potatoes, turnips, or cabbage, gives thrice as much food as one year of medium pasture grass. In his very useful Lectures on Agricultural Chemistry, Professor Johnstone adopts the same general proposition, but he couples it with some money estimates which I consider it important to notice. He says: "With the exception of rich pastures, it is said that land under clover or turnips will produce three times as much food for cattle as when under grass. If such a green crop, then, alternates with one of corn, the land should every two years (second year) produce as much food for stock as if it had been three years lying in grass, besides

the crop of corn as food for man, and of straw for the production of manure." Professor Johnstone then proceeds to discuss the money value of the produce of similar pieces of ground under such crops, and concludes, that "Although more food is raised by converting the land to arable purposes, and more people may be sustained by it, yet more money would be made by madowing the land, where a ready market exists for the hay; where it is allowed to be sold off the farm, and where abundance of manure can be obtained for the purpose of top-dressing the land every year." In order to arrive at this result he takes the price of produce as follows;

Hay, £5 (\$25) per ton.
Turnips, 10s. (\$2 50) per ton.
Barley, 4s. (\$1) per bushel.
Wheat, 7s. (\$1 75) per bushel.

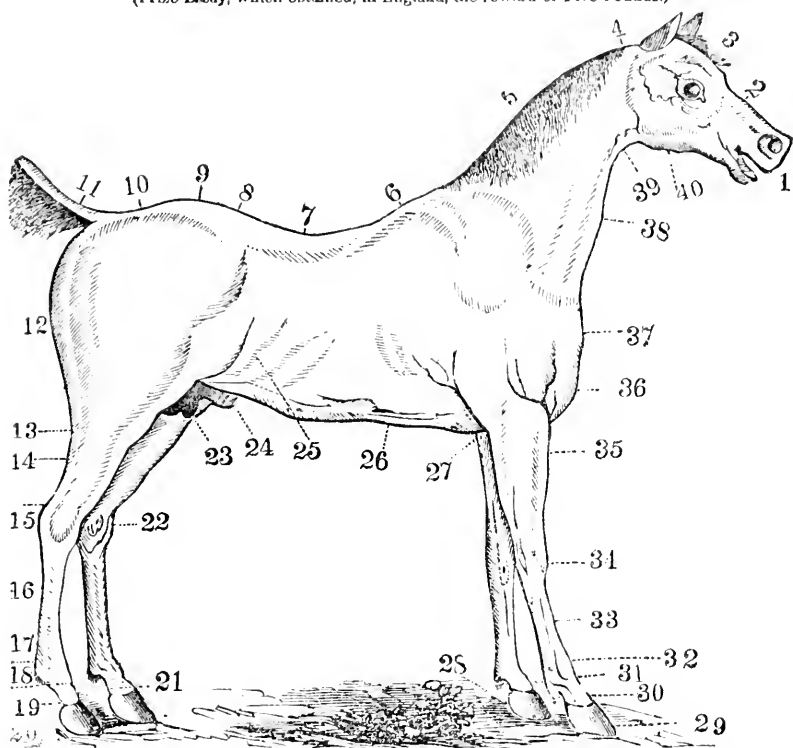
Such a price for the hay could certainly be obtained only in exceptional cases; the other circumstances he mentions could only be realized in some few localities, and there is no doubt but that, as a general principle in Agriculture, the cultivation of green crops and artificial grasses is not only that by which the largest quantity of food is raised, but also that by which the greatest money return is afforded to the farmer.

[The reader will bear in mind that while there are in this chapter facts and information of practical value, to be read profitably, he must not forget the difference in the cost of labor, which in England encourages the growth of hoed crops, and the difference in the greater moisture of the climate of that Island, which favors the production of grass throughout the year. In our country, the dearthness of labor would go to encourage grazing in preference to cultivation where the country will admit of it; as in our Eastern States, and also in the South and West, where the mountain range, in summer, is connected with great fertility and abundant production of Indian corn in the adjacent country for winter use in fattening hogs and cattle. *Ed. Farm. Lib.*]

FOR THE HOVE IN CATTLE.—No better cure has yet been found than an egg-shell filled with tar. The second application seldom fails.

THE HORSE :

(Prize Essay, which obtained, in England, the reward of Five Pounds.)



TERMS COMMONLY MADE USE OF TO DENOTE THE EXTERNAL PARTS OF THE HORSE.

| | | | |
|--------------|------------------------|--------------------|----------------------------|
| 1. Muzzle. | 11. Dock. | 21. Coronet. | 31. Large Pastern. |
| 2. Race. | 12. Quarter. | 22. Ham, or Hock. | 32. Fetlock. |
| 3. Forehead. | 13. Thigh, or Gaskin. | 23. Stiles. | 33. Cannon. |
| 4. Poll. | 14. Ham-string. | 24. Sheath. | 34. Knee. |
| 5. Crest. | 15. Point of the Hock. | 25. Flank. | 35. Arm. |
| 6. Withers. | 16. Cannon. | 26. Girth. | 36. Breast, or Bosom. |
| 7. Back. | 17. Fetlock. | 27. Elbow. | 37. Point of the Shoulder. |
| 8. Loins. | 18. Large Pastern. | 28. Heel. | 38. Windpipe. |
| 9. Hip. | 19. Small Pastern. | 29. Hoof. | 39. Gullet. |
| 10. Croup. | 20. Hoof. | 30. Small Pastern. | 40. Jawl. |

AN ESSAY ON THE EXTERNAL FORMATION OR STRUCTURE OF THE HORSE, AND ON THE DISORDERS ORIGINATING THEREIN.

Plerique omnes faciunt adole-centuli
 Ut animum ad aliquod studium adjungant, aut ad equos
 Alere, aut caues ad venandum, aut ad Philosophos.

TERENCE.

I PURPOSE, in the following pages, first, to give a succinct, but, I trust, useful and explicit description of the exterior conformation—the *make and shape* of that valuable animal the *Horse*; discriminating the *originally well formed* tit from the *cross-shaped*, and *likely-to-become-diseased brute*, and the *nag* that can go with safety and pleasantry on the road, or carry sixteen stone across a heavy country, from the *imbecile and weakly-constituted spider*; and, lastly, to show by what ready and

certain modes we may detect unsoundness in the purchase of a *prad*, and *when* we are to pronounce that *he is perfectly sound*.

The *Horse*, in the estimation of a sportsman, stands preeminent above other quadrupeds, as man does above every other animal: not only do matchless beauty and strength of form, combined with unrivaled speed, distinguish him, but the extensive utility he is of to us, and the share he takes in our diversions and perilous enterprises, serve to inspire us with even a de-

gree of affection for him. Every horse is adapted to some particular purpose; for horses not only differ in kind, but, like men, in utility, in temper, in stamina, &c., and the selection of them, in regard to these particulars, constitutes one of the most arduous and nicest duties of the *connaisseur*; he must readily acknowledge good or bad conformation—trace genealogy in the outline, and discover a *je ne sais quoi* about the *tout ensemble* that denotes good or bad instinctive and unalterable qualities.

In describing the good and bad points of a horse, it will be necessary to make use of many terms, denoting different external parts, which, to all horsemen will not require any explanation; lest, however, the reader be unacquainted with some of those terms, a plate is annexed, having references to the parts themselves in the figure of a horse. It requires some experience, but more attentive observation, to be what, in modern horse-phraseology, is called a *good judge*; i. e. (if we were asked to define a good judge,) to know, *at once, by a cast of the eye*, whether the nag, as soon as he is pulled out, is *likely to suit*: is he *cut out for a hackney*, or is he *calculated for harness*? Does he *look like a hunter*, or has he any good looks about him? Does he *show any blood*, or is he *all over a mongrel*? In fine, is he *the sort of thing* you want, or won't he do until he meets with a *greenhorn*? These, and various other important considerations we hope to unravel the nature of in the course of this inquiry, offering such remarks, from time to time, as may prove of practical service to the young and inexperienced horseman. At first sight of a horse, a judge takes a general survey of him, and if he observe any apparent disproportion or deformity, his attention is at once fixed to that particular point. Every horse, for example, that is tolerably well formed, should exhibit due proportions of limb and carcass; in fact, nine out of ten have as much carcass as is equal to the area of the space occupied by the legs in ordinary standing; but should his legs be extraordinarily long, or his carcass disproportionately small, he is said to have *too much daylight under him*, and that is certainly no mean objection. Should his head be very large, his neck of disproportionate length, his fore legs *stand under him*, or his quarters be *ragged and ugly*, such glaring imperfections cannot fail to attract our notice as soon as, or even before, the groom has set him on his legs. But we shall have occasion to particularize these things in a detail of the perfections and imperfections of the different parts entering into the composition of the animal.

The exterior of the horse may be divided, for the convenience of thus describing his several parts, into head, neck, body, and legs. First, we shall delineate a good head. The *nob* should be small. A large head is not only a *plain* head, but a bad point, inasmuch as it really, under certain circumstances, detracts from the powers of the horse; he has, in fact, more to carry—it is a burden to him, and the only way in which he can possibly carry it to advantage, is at the extremity of a short and upright neck. Like the weight of a pair of steelyards, if it is supported by a long and horizontal neck, its burden becomes enormously augmented, so that the weight transmitted to the fore extremities (for those parts support the head and neck as well as half the carcass) is much increased, and, from the natural preponderance of it before, is very likely to prove the cause of the horse's falling down.

more especially if the rider is heavy, every trip or misstep he may chance to make. In addition to all this, a *lazier* (or big-headed horse) is apt to have a *hard mouth*, or rather, we say, *no mouth*, so that we are always apprehensive of his being *heavy in hand*, and *unpleasant to ride*. It is proper, however, to state, before we proceed farther, lest we incur censure for these remarks, that the formation of the neck, and the *mode in which the head is set on*, and *how he carries it*, will have much to do with the head being objectionable from its size, and with his being light or heavy in hand; for we have known many *big-headed horses* ride well, and be as *safe* and as *light in hand* as any others. Next to size, its shape becomes a consideration. Every *feature* should give animation to the countenance; let the forehead be *broad* and *flat*; the eye *staring* and *full of fire*; the ears *thin, fine, and often erect*; the nostrils *circular, dilated, and reddened within*; the lips *soft, thin, and hairless*; the jaw *extended*, and the cheeks *well marked*.

"Fire from his eyes, clouds from his nostrils, flow."

This, at least, is what we would have it in the thorough-bred, and as a general rule, the nearer that of any other description of horse approaches to it, the better the *family he springs from*, and the more sanguine we may be in our prognostic of his abilities. That such a horse *looks like a stickler*, or is a *perfect gentleman about his nob*, are no uncommon nor very unmeaning expressions in the mouths of sportsmen and coppers. But his head may be very long, or it may be very short, though we do not know that either is particularly objectionable, except as an eye-sore, if the countenance is something like what we have just described; unless he be a *Yorkshireman*, and then, certainly, we should not fall in love with such a big *canister*. The race ought to be perfectly straight, (see plate,) and the muzzle, in the blood horse, square, and such as will go into a *pin pot*; a *Roman nose* (one in which the race is curved) is by no means desirable, though his *napper* be but of ordinary dimensions; it is seen more commonly, however, in a big head, which it, in a side view, makes appear not only much larger, but exceedingly ugly; this may be said to constitute a *plain Yorkshire head*. Withal, the head, to render it handsome, should be *well set on*; its junction with the neck should form a *sort of curve*, so as to leave ample space in the throat for a large and prominent *gullet*, by which we may judge him to be a *good-winded horse*.

The neck now demands our attention: if good, the crest will form an arch of agreeable curve from the poll to the withers,

"With neck like a rainbow, erecting his crest."

It will be of proportionate length, and progressive increase in breadth, as it approaches the chest. A long neck, if it be *straight*, or but *little curved*, is objectionable, for reasons we stated when speaking of a large head; a short one, however excellent it may be on the principle of the steelyards, is never *handsome* and seldom exists without rendering even a good hackney *piggish*. That short-necked horses are better winded than others, because the air has less distance to pass to and from the lungs, is an opinion to which we cannot subscribe. The neck should also be *thin*, not *thick and heavy*, and *rounded and straight along its lower margin*; should the canal of the jugular vein be

deep, and the windpipe *full* and *prominent* below it, we may regard it as a sign of *good wind*. When the arch of it is reversed, *i.e.* below instead of above, and the erect, or what ought to be the erect, near the withers, is hollow and sunken, the horse is said to have an *axe-neck*, one of the greatest natural deformities common to these parts. Under these circumstances it is usual for a *dealer* to say that the neck is put on the wrong side upward; but, in reality, it appears to arise from the junction of it with the chest being too low down.

Of all the points of a horse, the shoulder, for a hackney, or a hunter, is of the utmost consequence: without a *good* shoulder, no horse *can ride well*; he may be a good *harness* horse, or he may *race* well; but it is physically impossible for him to carry his rider with ease and pleasure on the road. These are no speculative opinions, but facts, grounded on the experience of all men who *know a horse when they see one*, and the result of our own every-day observations—so much does the action of the fore extremities depend on the structure of this part. And now, what is it that constitutes a *good* shoulder, and how are we to know a *good* from a *bad* one? In order to render our answers to these questions intelligible, it will be necessary for us to deviate a little, and say something on the internal mechanism of the part. The *scapula*, or shoulder blades, are attached to the ribs by many powerful muscles, which move them, during the action of the animal, round their own axis, or, at least, in a very similar way; and though they can only revolve through the small segment of a circle, that segment is greater in proportion as they are more obliquely placed against the sides of the chest; hence it will be seen, that what is called an oblique shoulder is most advantageous for motion.—Again, the *best shouldered* horses have, generally, *thin* withers; but this is not indispensably necessary to the formation of a *good* shoulder, for we know some, and *good judges*, who are of a contrary opinion. We must confess, however, for our own part, that we prefer *fine* withers. The *thickness* of the withers will depend on the conformation of the chest and the obliquity of the *scapula*, and not so much as some persons, high in veterinary repute, have supposed, on the length of the *dorsal spines*.* Now, if, in viewing the fore parts of a horse, we find he rises upon the withers, (and we must take care that this be not an illusion, produced by placing his fore legs upon rising ground,) and

that no *traces* of his blade bone can be seen under the skin, but all appears *smooth* and *level*, we may conclude that the shoulder is *oblique*; though a more direct proof is furnished us by carrying the eye from the summit of the withers to the extremity of the *point of the shoulder*. If it is upright, or nearly so, unless it be in a thorough bred horse, (such a shoulder is only *fit for the collar*;) we shall perceive an irregularity under the skin, just below the withers, by passing our hand over the part, and find, on grasping the part, that it is *thick* and *clumsy*, because we are actually at the time grasping the *blade bone* as well as the *withers bone*; though (as before observed) these may be *thick* from the construction of the chest.

A *lean* shoulder is one having *thin* withers, covered with *fine* and *genuine* muscle; a *loaded*, or *overloaded* shoulder, one with *thick* withers, clothed with *coarse* and *flabby* muscles; and the *thickness* of the wither, as was said before, depends on the obliquity of the *shoulder blades*, and the proximity of their superior borders to the *dorsal spines*. That horses have been fast runners on the turf with *bad* shoulders, is no proof that they would not have galloped better and quicker with *good* ones; and we must recollect that in a racer the *hind quarters* are of primary importance, the *fore quarters* only of secondary consideration; but, on the road, we know that *bad-shouldered* horses are never *pleasant* nor *safe* hackneys; they *step short*, are *padding* walkers, *roll about* in their trot, and are exceedingly likely to *go to prayers*.

The *fore-leg* should descend in a straight line from the bottom of their shoulder, *i.e.* in a lateral view; but when seen in front, it ought to incline gently inward. If the elbow projects directly backward, and the toe points with precision forward, we may rest satisfied that the horse is not *twisted in his fore legs*. Turning the toe *in* or *out* in standing is apt to be accompanied with distortion, or deformity of the limb. This circumstance, therefore, is seldom seen without materially lessening the value of an animal. Of the two faults, turning them *out* is the greater, for the pointing *inward* is seldom carried to the extreme. A *good* arm is *broad* and *thick*, *long*, when compared to the leg, and marked exteriorly by *muscular prominences*. The elbow cannot project *too far back*, and the *plumper* the muscle is immediately above it, the greater we may conclude to be the animal's powers.

The *knees* ought to be *large*, *broad* in front, and distinctly marked with several *bony knobs*; *lateral thickness* is, also, of much importance. When the *radius*, (the bone of the arm,) instead of descending in a straight line, is directed backward, so that the knee appears to recede from it, the horse is said to be *calf-kneed*, a term that well conveys the idea we have of this formation: it is always objectionable for the *saddle*, but not for the *collar*. The leg should fall in exactly perpendicular from the carpus, and be *short* when compared with the arm, the converse of this being indicative of weakness; and of sufficient *breadth* to enable a purchaser, even at a distance, to distinguish the *tendons* and *bone*, with perfect clearness, in their relative situations; for, if he cannot do this, there is reason for suspecting that he is *gummy*, the effect of hard work or premature use, and never a *natural defect*. Should the legs be *round* and *straight* below, they are called *stilty*, and

* Bones of the withers. It is contended, on another side, that the *situation* of the *scapula* has nothing to do with the *thickness* of the shoulder, but that it is wholly owing to the *length* of the *spinous processes* of the *dorsal vertebra*. To establish this opinion must be proved two data, viz.: 1st, that these spines are short, or comparatively so, in all *thick-shouldered* horses, and long in *thin-shouldered* ones; and, 2dly, that the converse of this never happens. To one who has dissected shoulders, these are certainly *home-thrusts*; such, at least, as we could not parry; though we know that the dimensions of these bones may and do, like those of most others, vary in different horses. But they also vary in their degrees of inclination; and may not this circumstance alone, in some measure, affect the construction of it? At all events, we know these facts, *dray* or *cart* horses have *wide chests* and *thick shoulders*; others with *narrow chests* have *thick shoulders*, but with *narrow chests* *thin*, unless the *scapula* be *upright*. Now, if they who differ with us, mean to assert that all this arises solely from the length of the *dorsal spines*, we can only say, *credat judex appella*.

are never firm and good. But the best and only correct way to judge of legs, is to pass *the hand down them*; if they measure much round, and the sinews feel firm, hard, and distinct, like well-braced cords, and if the intervening spaces between bone and sinew be *clean—free from gum*—we may pronounce that they are good.

The *fetlock*, as a joint, should be of large dimensions, proportionate with other parts; no joint, in fact, is too large, providing its *bony prominences* be distinctly seen with the naked eye, and its *ligaments* perceptible under our fingers. I need not, therefore, farther enforce this truth in speaking of these organs. *Knuckling over* in the fetlocks is a sign of original malformation, such as *uprightness* in the pasterns, or else is the result of hard work; and the tottering affection of the limb, accompanying this state, is caused by local debility and excessive irritability in the nervous system. The pasterns always deserve much of our attention; when good, their length is proportionate with that of other parts, and they incline, with *much obliquity*, downward and forward to the foot, should they approach the *perpendicular*, they are almost always short, and are said to be *straight* or *upright*; but when they approximate to the *horizontal*, they are long, and called, though erroneously, *oblique*; for they are not so obliquely placed, under these circumstances, with regard to the leg, as they are when properly constructed. Perhaps no part of the horse exhibits the wisdom of Nature more, in regard to the adaptation of it, in point of structure, to the purpose for which the animal was designed, than this: in the racer, for example, the pasterns are *lengthy*, and incline to right angles with the legs, whereby more weight is imposed upon the hinder parts of the fetlock and hoof, in which situations are placed *pieces of mechanism* which by their elasticity serve as so many springs in diminishing the effects of concussion so requisite in this animal, which was intended to perform *swift and sudden* movements; but in the cart-horse, whose action is *slow and powerful*, the pasterns are *short and nearly upright*, so that most of the weight is thrown upon the main bones of the foot, and thereby his springs, which have less play than those of the Arabian or thorough-bred, are not so much acted upon; consequently less provision is made against concussion, for strength, and not elasticity, is sought for in the construction of this powerful animal. Horses with very oblique pasterns are more likely to *break down*, and for this reason they ought never to be shod with thin-heeled shoes; on the other hand, if they are very short and upright in these joints, they are seldom or never sure footed, and will soon become *stiff and groggy* from work.

The *hoof* next engages our notice, and this is a part of which we should be more than commonly scrupulous and nice in our inspection: "*No foot, no horse*," is a trite but very true adage, and one that is not kept sufficiently in view by the purchasers of horses, or they would not have so frequently to *lament their hard fate* in having *gone to market for a screw*. First, we should look to the size of the hoof: a small foot is not only objectionable in itself, even though it be a natural formation, but is often a characteristic of disease; but a *small and upright* foot is a morbid structure, and is scarcely ever seen in any one but a *dancing-master*, or light timbered filly. White hoofs are to be eyed with suspicion; they are really weaker, and

more liable to disease than dark or black ones; and if a horse has one white and the other dark-colored, and he is lame, in nine cases out of ten it is the white foot that is affected. So much with regard to the exterior of the foot before it is *taken up*. Other considerations now engross our attention. Is it contracted? i.e. is its circularity destroyed by narrowness at the heels? A good hoof is *circular* in the tread, or nearly so, measuring as much from side to side as from toe to heel; but we frequently find those that are morbid measuring as much from toe to heel as twice the lateral diameter. On the other hand, the *wall of the hoof*, which should, at all times, be perfectly *smooth* and free from ridges, (the contrary indicating disease,) may be very *oblique*, in which case it is not only *circular*, but *spreads out*, even to a morbid degree, in the tread. Large, heavy horses, such as are bred in low, marshy situations, are most subject to have this kind of foot, in which parts of the country it is preferred by many people, who contend that their hunters derive advantages from it. As the *strong* and *upright* foot is likely to become *contracted*, so is this subject to a disease called *fleshy soles*; indeed, in the former, the sole is concave; but in the latter it is flat, on which account the two require different modes of shoeing.

The *body, or carcass*, may be subdivided into the chest, belly, and loins. So far as regards the *constitution* of the horse, his *stomina*, or his *bottom*, no part is of more consequence than the chest; but, like that of many other parts, no particular construction of it is the best for all kinds of horses. That of the cart-horse should be *circular, broad in the bosom, and large in the girth*; that of the thorough-bred more circumscribed, but not *flat-sided*, very deep, and, also, extensive in the girth; so that the two differ more in *width* than in *depth*. Had the racer possessed a broad, circular chest, his shoulders must have been thick, and his fore legs far apart; and no horse so made can gallop well or fast, though many such are ridden as hackneys; they are apt to have a rolling gait, and an awkward mode of going altogether, perceptible at all times to the *connoisseur in horse flesh*; but we must be careful, even in choosing racers, not to run into the other extreme; for, if *both legs come out of one hole*, or he be *flat-sided*, he cannot endure much fatigue, is very probably a *bad feeder*, and certainly predisposed to disease of the chest. A *full and prominent* bosom is a fine point; and the ribs should *stand out* with sufficient curve to afford space enough within; for which reason, some, as we before remarked, prefer a *thickish shoulder*, if it be an oblique one; and another advantage accompanying such conformation is, that *we have something between our legs* when mounted, a property, certainly, that every horse ought to possess. As to the belly, its shape will depend much on that of the chest and loins. A *narrow-carcassed* horse can never *do much work*, readily loses his condition, and with difficulty recovers it, being, very commonly, but a *queer feeder*. We should have *something to kick against*, and unless he *carries his dinner with him*, his bread-basket cannot be said to be of the best description.

The *back* should be perfectly *straight*; a *hollow* back is a sign of want of strength; but it is often extremely pleasant to the rider. A *roach-back*, the reverse of a hollow back, is by no means handsome, though some argue that horses having such are stronger; one objection to it is

that it is apt to chafe from the saddle. The loins are a point that we should always be nice about. A *hollow* back and a *narrow* loin are generally indicative of natural weakness; but the latter is far more exceptionable than the former: a horse so formed can seldom carry much weight, soon knocks up, and often proves a bad feeder: his constant *hollowness* in the flank, and his *lack* of appearance altogether, after a day's hunting, demonstrate how incapable he is of bearing the exertions required of him.

The *tail*, in regard to the manner in which it is set on, is not to be overlooked: a horse that carries *two good ends* (of which the head forms one, and the tail the other) always *looks grand*—is a *perfect gentleman in his appearance*. Above all others, the charger should possess this point in perfection, to coincide with the *grandeur of his carriage* in the ostentatious parade of a field-day. *Hinc bellator equus campo sese arx ins infert*. The tail, in most horses, should form, when elevated, a straight line, or nearly so, with the back. A gentle declivity of the *croup*, however, from the summit of the rump, denotes the *blood-like quarter*, and adds much grace to this part in the thorough-bred; should this line decline very much, the horse is said to be *droop-arsed*, and the quarters lose much of their beauty as well as their natural power. Nothing is so ugly, in a *full-quartered horse*, as to see the tail set on low down, issuing abruptly from the rump as if a *bronistak* had been stuck in the place. The dealers who indiscriminately fig all, often *spoil the sale* of a horse of this description by *curling the tail upward with a dose of ginger*. Some horses *carry a good tail naturally*—others, by means of art having undergone the operation called *nicking*. *Gingery* or *peppery* hackneys seldom require *nicking*; indeed, hackneys are often called, from this circumstance, *cock-tails*, in contradistinction to *thorough-breeds*, who seldom or never carry any but a *drooping tail*, better known by the name of *blood-tail*; a *cocked-tail* would be incompatible with a *blood-quarter*: hence it is that blood-horses should *never be jigged, or nicked*.

The *quarters* may be *full, small, or fine and blood-like*. *Full quarters* are such as are possessed by cart-horses, large machine-horses, and hackneys able to carry great weight. These horses are wide in the hips, though their hips are but indistinctly marked, in consequence of being enveloped by large, coarse, flabby muscles. People are too apt to regard *wide hips* as an objectionable point, from their giving to the horse that appearance called *ragged hips*, which, indeed, are not only ugly, but denote bad conformation, though, of themselves, they denote good make; for the fact is that *ragged hips* are produced by a *bad loin*, and a *lank, flat and weak quarter*. Were these parts well formed, we should pronounce the hips to be of the best description. The *small quarter* is one that is often seen in a horse of this form; though the general contour of it may be *regular and uniform*, it is altogether *disproportionately small* when compared with the carcass: if it grows narrow toward the hinder part, the animal is often said to be *goose-rumped*. But, of all other structures, the *blood-like quarter* is the best adapted for speed: in it the tail is *set on high up*, and the hips are high and prominent, but not *ragged*; so that many of our best racers are *higher behind than before the spaces between them and the points of the quarters great*, as are also those between the latter parts and the sti-

les; the haunches want the *plumpness and roundness of the full quarter*; but, so far from being either *lank or thin*, are *striped with bold and prominent muscles*, which, being free from the *adipose and cellular substance* that constitutes the *flabbiness* of those of the *full quarter*, are so distinct, even through the skin, that we can distinguish where one ends and another begins. The stiles should *project boldly forward*, and have a perceptible *irregularity of surface*. The thighs are *good*, when *long, thick and muscular*; little *hillocks, or rotundities*, upon them, mark the course of *muscles*, and always denote great power; the nearer the angles which they form with the parts above and below approach to *right angles*, the more force the *muscles* can exert; *ergo*, the more powerful the horse. The hock, of all other parts is in the racer of the utmost importance; it should be *broad, flat*, and of *large dimensions*. The propulsion of the machine is effected chiefly by those *muscles* that are attached to the point of the hock; so that the more *projecting* this is, the greater the force they can exert, simply on the principle of the lever: as a man with a long oar can row with more facility and effect than he who uses the short one, or *scull*, so can a horse with broad, projecting hocks *get over the ground* with comparative ease to himself, and pleasure to his rider. The advantages the *half bred horse with good hocks* possesses as a hunter, are of no less moment than those a *good hock* confers upon the racer: his great propelling powers will enable him to *clear his rasps** with so much grace that the rider will find it a *difficult matter to pound him*†, and empowers him to *make such play* in the mud as will soon *set up his lank-thighed and straight-lacked competitors*. The point of the hock cannot *stand out* too much; indeed, the greater its dimensions, altogether, the better, provided it be not *gummy*, or that its various *bony projections and sinewy parts* be distinctly seen or felt. If the hock is narrow, its point round, and not well defined, it is said to be *straight*, and, from being very liable to *curbs*, is often called a *curby-hock*: should its point be directed inward, and the toes turned outward, the horse is *cow-hocked, or cat hammed*. As this is a part very liable to defect, as well as to original malformation, the nicest examination is required to detect all that may prove disadvantageous or injurious to its function, the proper performance of which is of so much importance that the propulsion of the whole machine depends chiefly upon it.

REMARKS ON THE PURCHASE OF A HORSE.—Having selected a horse whose *make and shape* please us, our next consideration is his soundness; for, though the horse-dealer may declare that he is as *sound as a bell*, we are to take the phrase as one having various meanings, and not be deterred from examining him, and narrowly, too, on that account. *Sight, wind, and limb*, must be the uppermost objects of inquiry; for nine hundred horses out of a thousand are defective in one of these particulars. First, then, examine his eyes, and do this before he comes out of the stable. Having placed him so that the light may fall upon the eyes but in one direction, see that they are of the same size, and equally full; that the haws are not prominent, and that one does not project more than the other; that the eyes are perfectly clear and

* *Rasper*, a high and dangerous leap.

† Surrounded by inaccessible rasps.

transparent; and that the pupils, or *apples of the eyes*, are exactly alike in size as well as color. A sunken eye, or one over which the lids are partly closed—a projecting jaw—an opaque or semi-opaque front—a pupil dilated, or a white or clouded one—are so many omens of disease, for which we should reject the *prod* as a *cupid*.† or, what is often worse, a *blinker*, who will shy at all he meets with, and break your neck the first *post*‡ you ride him at. Having satisfied yourself in regard to his *peepers*, have him *pulled out*, and next proceed to examine his *pipes*. If *good* and *sound*, on being nipped in the gullet, he will utter such a sound as cannot fail to strike the ear as the emission of a *good pair of bellows*; but if his *lungs* are *touched*, and he is a *piper*, (that is, *broken-winded*, or *having no wind at all*), he will give vent to a *dry, husky, short cough*. Should a horse be suspected of *bad wind*, however, the purchaser cannot do better than direct his attention to the flanks, which, under such circumstances, will work either much quicker than ordinarily, or heave deeply, and with great irregularity; they will be considerably longer in contracting themselves, in order to squeeze the wind out,|| than in falling to let it in, which they do, if he is a *piper*, quite suddenly. But, though not a *piper*, he may be a *whistler*, or, what is worse, a *roarer*: the first may be known by the peculiar *whizzing* he is addicted to when put to sudden or long continued exertion; the

latter, by *blowing his horn* clamorously under similar circumstances; and either may be made to display itself, by the purchaser giving him a smart cut, or even feigning to do so, with his *bat of ash*.

Thirdly, and lastly, as to the limbs. If, in passing our hand down his legs, we find any unnatural protuberance, or puffiness, or if, in feeling first one leg and then the other, we discover any difference between them, disease, more or less, is present; he may not be *lame*, but he is not *clean upon his legs*. *Splents*, *windgalls* and *ringbones* may be present without occasioning lameness, but they are all unnatural, are considered *blemishes*, and are all to be regarded with a suspicious eye, as either denoting past *hard work*, or betokening future evils. On the same principle, a horse may have a *spavin*, and be *only stiff* from it at *starting*, or he may have a *curb*, or a *thorough-pin*, and be *perfectly sound*; but these are still *blemishes*, and as such detract from the intrinsic value of the animal. In explaining the advantages resulting from *good conformation*, we are *naturally* led to make remarks *en passant*, on the disadvantages from *bad*; in pursuance whereof, I have shown *why* such a structure is *bad*, a question that *necessarily* entails upon us the mention of the *disorders originating therein*; i. e. the diseases to which such parts, in consequence of being *malformed*, are *predisposed*.
I N O P E S.

CULTIVATION OF THE VINE.

If any exhibition of supineness on the part of American agriculturists could surprise us, it would be the neglect of so large a portion of them to provide, every man his own table at least, with an abundance of one of the most wholesome and delicious contained in the whole catalogue of fruits adapted to our climate, and of easy cultivation.

In the last September number we adverted to this subject, referring to the opinions and experience of Dr. Underhill, as of the highest authority, and gave at the same time an interesting letter from Mr. Mosher, of Ohio. With a view, however, to the interesting nature of the subject, and the necessity for fuller information on the part of those who would like to cultivate grapes on a scale at least adequate to the wants of their own family—and seeing, especially, that the time is at hand for the commencement of this beautiful and interesting department of Horticulture—we have pleasure in transferring, as we are allowed to do, what follows, from BROWNE's book on "*The Trees of America*," for which a gold medal was awarded by the American Institute. We are forced to stop, in this number, with what the author says of management during the first year. The residue, up to the "seventh year and subsequent treatment," will be given in our next, with engravings to illustrate the progress of its growth and management from year to year. The cut on the next page represents the *Isabella* (*Vitis labrusca Isabella*).

VARIETIES.—Several attempts have been made to classify the varieties of this species, but not with much success. In most cases, the form and color of the fruit alone have

been considered, and in others the shape and clothing of the leaves; but, as it will be impossible for us to enter into all of these considerations, we shall only treat of a few of

* Transparent cornea.

|| Expiration.

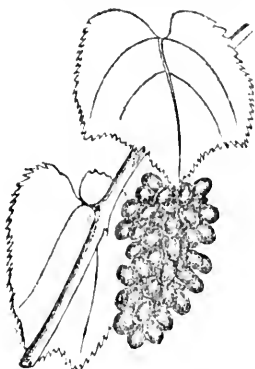
(73b)

† A blind one.

§ Inspiration.

‡ So called from *planting* all but the *nonpareils*.

those that have successfully been brought under cultivation, which are as follows :



1. *V. L. ISABELLA*, Prince. *Isabella Grape-vine*.—This variety is distinguished by its large, dark-purple fruit, of an oval form, and of a juicy, musky flavor. It possesses great vigor of growth, is a healthy and abundant bearer of fruit, and what renders it exceedingly valuable in our climate is, that it requires but little protection during winter.—Concerning its origin and history, we are indebted to General Joseph Swift, of Geneva, New-York, for the following account, which we trust will be no less acceptable in coming from so respectable a source, than in the interest elicited in so valuable a production. It appears that Gen. Smith, of Smithville, North Carolina, in 1803, procured from Dorechester, South Carolina, several roots and cuttings of a hybrid vine, which, it is said, had been originated there by some families of Huguenots, between the Burgundy grape of Europe, and the native Fox grape of that vicinity. In the year 1817, a vine produced from these cuttings was transplanted from Smithville, by Mrs. Isabella Gibbs, in honor of whom this variety was named, to the garden then owned by her husband, Col. George Gibbs, which was situated along the southerly side of Cranberry, between Willow and Columbia streets, in Brooklyn, New-York. In 1819, the garden was purchased by Gen. Swift, who very generously distributed roots and cuttings of this vine among his neighbors and others—more especially to the late Wm. Prince, of Flushing, Long Island; through whose efforts it became widely disseminated throughout the Union, and was sent to several countries in Europe, Madeira, &c. The garden has since been divided into lots, and occupied by buildings; and the original Isabella vine, after attaining a circumference of more than a foot, was severed to the ground in 1833. Fortunately, however, several vigorous vines have since sprung up from the roots, which continue to bear fruit in abundance. From other statements, it would seem that this variety is not a hybrid, but was known in this country prior to 1800.

(739)

2. *V. L. BACOIS ALBIS*, London. *Bland's Pale-red Grape*, *Bland's Fox Grape*, *Bland's Virginia Grape*, *Red Scuppernon Grape*, *Carolina Grape*, *Mazzei Grape*.—This variety may be known by its pale-green leaves, lengthened clusters, with large berries, of a roundish or oblate form, pale-red color, and sweet, juicy pulp, of a pleasant flavor; in some cases, however, at full maturity, the fruit is said to acquire a dark-purple or red-wine color. It is more esteemed by some, as a table fruit, than that of the Isabella, having a thinner skin, and containing a pulp of less consistency. It was deemed for some time as unsuitable for our northern climate; but it has been found to succeed in maturing its fruit in most seasons, in the neighborhood of New-York, and may successfully be cultivated as a wall fruit in a much higher latitude, both in Europe and America. It has been contended that this variety was brought from Italy by Mazzei; but it is well known that it was cultivated by Col. Bland, of Virginia, long before that gentleman visited this country. The original vine is said to have been found on the Eastern Shore of Maryland, by Mr. Bland, who presented cuttings of it to the late Wm. Bartram and Samuel Powel, of Philadelphia, and some of the persons who received slips of it from the latter gentleman gave it the cognomen of *Powel Grape*.

3. *V. L. CATAWBIENSIS*. *Catawba Grape-vine*.—The fruit of this variety occurs in loose bunches, of an inconsiderable size, and of a beautiful appearance. The berries are large, and much varied in their flavor and color, according to their exposure to the rays of the sun. Those which receive the full effect of the sun are of a bluish-purple, and a slight musky flavor; but, when partially exposed, they are of a lilac hue, and those which grow entirely in the shade are of a translucent white, sweet, and devoid of musk in their taste. The fruit is earlier in ripening than that of the preceding variety, and, when allowed to remain on the vine until perfectly mature, the pulp nearly disappears. It is esteemed as a table grape, and has also been manufactured into an excellent wine. The original vine is said to have been procured from the banks of the Catawba, and planted in the garden of the late Mr. Schell, at Clarksburg, in Maryland, and has been known to bear nearly eight bushels of fruit in a single season.

4. *V. L. ELSINBURGENSIS*, Prince. *Elsanborough Grape-vine*.—This variety is noted for its sweet, juicy fruit, which is free from pulp, and musky taste. The clusters are of a medium size, with loose berries of a blue color, which are said to make an agreeable wine. Its foliage is of a pale-green, and resembles that of the wine-bearing grape of Europe, more, perhaps, than that of any other American variety. It somewhat resembles the Isabella in its bark and wood, but its fruit is thought to assimilate more nearly to that of the Meurier, of France. The original vine

was found and brought under cultivation by Dr. Hulings, in Elmsborough, in New-Jersey, where, undoubtedly, it was indigenous.

SOIL AND SITUATION.—The Isabella grape-vine flourishes best in a soil that is neither poor nor exceedingly rich, rather loose than compact, moderately moist, instead of being wet or very dry, and is free from an excess of salts, pernicious gases, and corruption; and in general, land recently cleared of wood is preferable to that which has been for some time under tillage. The situation should be chosen on moderately rising ground, rather than on that which is plain or abruptly steep, and the aspect should be inclined toward the south or east, sheltered both from the wind and intense heat of the sun, particularly during the latter half of the day, but not so much so as to impede a free circulation of air. The climate should be rather dry than moist, and warm instead of being cold. A doctrine advanced by various authors is, that the region of the maize and peach culture is also that of the wine-bearing grape of Europe. By parity of reason, the Isabella, and several other varieties, which are equally or more hardy than the European species, may be successfully cultivated from Mexico to those parts of America where the maize, or Indian corn, is to be considered a sure crop; that is, they will succeed along the shores of the Atlantic, in any parallel southward of the forty-third degree of latitude, and much farther to the northward, west of the Rocky Mountains.—The Isabella will also often prosper under circumstances considerably at variance with any of those above stated, but its fruit will not be of so fine a quality, nor so rich in its flavor.

PROPAGATION AND MANAGEMENT.—The *Vitis labrusca* Isabella, like all its congeners, may be propagated from seeds, by cuttings or layers, and by grafting or inoculation; but the mode almost universally adopted is by cuttings from the branches and roots. A simple, detailed account of the growth of a vine, from its separation from the parent stem to the period of perfecting its fruit, perhaps will convey the best idea of the process, and we will offer the following, as deduced from experience:

It was the opinion of L. Junius Moderatus Columella, a distinguished writer on husbandry, who flourished more than eighteen hundred years ago, and who owned an extensive vineyard in that part of Old Spain now called Arragon, that no kind of land whatever can be fruitful unless it be diligently, carefully and skillfully tilled, more especially when employed for vineyards. "For a vine," said he, "is a delicate, tender and weak thing, and can by no means bear with hard usage; and, for the most part, it is consumed by too much labor, and bearing too great a quantity of fruit; and, if you do not restrain it within due bounds, it perishes by its own fruitfulness.—But when it has, in some measure, strengthened and hardened itself, and attained, as it

were, to the vigor of youth, it may prosper under neglect. But a young vineyard, while it is growing up, unless it receives due care and attention, will be reduced to the poorest and most starving condition, and will pine and waste away in such a manner that it can never afterward, by any experience whatsoever, be recovered and restored. Therefore, the foundations, as it were, must be laid with the greatest care; and, from the first day of planting, it must be managed like infants, with unceasing attention—which, unless we do, all our expenses will be laid out to no purpose, nor can the proper season of anything be recalled when once we let it pass." First, then, let us select a proper site of ground, and proceed at once and trench it to the full depth required. If it be situated on a plain, or in a valley, it should be dug two feet in depth, and on rising ground three; but on a hill-side, somewhat steeper, it should be turned up at least four feet, in order that the roots may penetrate beyond the reach of drouth. If the cuttings are intended to be planted in drills or rows, let there be formed trenches three feet in length, two feet in depth, and the width of a spade—leaving intervals or baulks, a yard in length, between the trenches, till the row is finished. Then, with good virgin soil, if it be at hand—if not, let it be procured from the woods—let us fill the trenches therewith, mixing it at the same time with a due proportion of leaf-mould or well-rotted manure, or, what is still better, the leaves and husks of vines, or grape-seeds, in order to quicken and strengthen the growth of the plants. If a vineyard be the object which we have in view, let the rows or drills be trenched from five to ten feet asunder, according to the surface of the ground and the latitude of the place. If the situation be on a plain, in a high degree of latitude, the rows should be eight or ten feet apart; but if it be on the side of a very steep hill, or in a low degree of latitude, five feet will be sufficient; and on moderately inclined surfaces, or in higher latitudes, six or eight feet apart will be all that is required. With regard to the direction of the rows, and the height to which the vines should be trained, they may run in a manner that will allow them to face any point of the horizon between south and east; and they may be supported on props, or trellises from six to ten feet in height, and even more, according to the vigor of the vines.—But in cities, and about houses in the country, single vines may be trained on the sides and ends of buildings, along the sides of fences, or on the trunks and branches of trees.

The most favorable season for planting the Isabella grape-vine in the United States is when the red-flowered maple is in bloom, which usually occurs in Georgia from the 20th to the last of February, and five or six weeks later near Philadelphia and New-York. In selecting the cuttings for a vineyard, they should be of one variety, and taken from the most fruitful part of the vine. Let us not con-

tent ourselves with single clusters, but those which are the most prolific. The greatest proportion of fruit grows from the buds on the last year's shoots next to the old wood, with the exception of the nearest eye the top buds being unfruitful and seldom bearing at all. Some prefer to plant cuttings containing a considerable portion of the old wood; but, as it is not always prudent nor economical to mutilate a favorite vine too much, it is best to select fruitful cuttings of the last year's growth, with the wood well ripened. They should be of a moderate size, short-jointed, and containing from six to eight eyes or buds in each. They should be cut off transversely from the vine, with a sharp knife, close to the old wood, and not less than two inches of blank wood should be left for the protection of the terminal buds. The ends of the cuttings that are to remain above the ground should be cut in an oblique direction, and the sloping side should be opposite the side containing the uppermost bud. If possible, they should be planted in calm weather, immediately after separation from the parent vine, and be obtained from a soil, situation and climate similar to those in which they are intended to grow; but, if any difference in these respects should unavoidably occur, it will be better to transplant from a poorer to a richer, and from a dryer to moister soil, as also from a colder to a warmer climate. But, should it be necessary to convey the cuttings from a distance, their lower ends should be immersed in a composition of fine earth, well mixed with linseed or other oil, of about the consistence of tar, as soon as they are cut off from the parent stock; at the same time taking the precaution not to cut off the top ends till the moment they are to be used.

MANAGEMENT DURING THE FIRST YEAR.—The ground having been prepared in the manner above described, the cuttings are next to be planted in the centers of the trenches, so that each terminal bud will be even with the surface, and directed toward the south. Then the earth must be firmly pressed round each plant, and, should it subsequently settle and leave more than one bud above the ground, more earth or mould must be added to bury them up.

As soon as the season becomes hot and dry, it will be necessary to protect the cuttings from the mid-day sun, by means of matting or other materials, which should be removed toward evening, and allow them to remain uncovered until the next morning, at about the time of the disappearance of the dew.—Strict attention must now be observed in keeping the soil around the cuttings continually moist, and, should not this be effected by natural means, it must be done by sprinkling rain or river water over them, or, what is still better, soap-suds, or other stimulating fluids, specially prepared for the purpose, but not too strong. Soon after the cuttings begin to take root, which may be known by the swelling of the buds above the surface, young shoots will gradually protrude, and the plants will require but little attention during the remainder of the season, except an occasional hoeing, to destroy the weeds, and to loosen the soil in order to admit the air and moisture about the roots. Should the season prove dry, however, and the earth around the plants become parched, it will be necessary to irrigate them frequently with rain or river water, or with prepared liquids as suggested above. Early in autumn, rub off all the buds from each plant, except two, which are to be reserved for training the ensuing year.

The method of managing the vine from the first to the sixth year, as practiced by Mr. B. E. Valentine, of Philadelphia, and published in Holly's "Orchardist's Companion," for 1841, is the same as that recommended by Clement Hoare, a highly esteemed writer on the cultivation of the vine, and whose mode, with a slight variation for climate or seasons, is believed to be best adapted for this species of culture of any practiced in the United States. "On the first of December, or as long as the weather remains open," says he, "the soil round the roots should not be covered over; but, as soon as frost comes, a good covering of litter or well-rotted manure must be laid over the ground, as far as the roots extend; and, if the weather be very severe, it will be better also to cover over the stem to the depth of five or six inches above the top of it. The young plant, being thus well protected from the severity of the winter, may remain in this state till the first of March.

✍ S. B.'s last, in which he courteously takes leave of X. Y. Z., was received too late for this number. We are glad to see them part without any signs of that animosity which intellectual controversy too often engenders in minds less liberal and expanded. We should still farther rejoice to have them open and work some of the rich veins in practical Agriculture which have not yet been exhausted or explored.

BEST WATER FOR PLANTS.—It is well known that rain water is much better than spring water for promoting the growth of plants: this is owing to the former containing ammonia, and which is abundant in liquid manure. Pounded carbonate of ammonia mixed with water will quickly show the efficacy, when sprinkled on grass.

LETTER III.

ADAPTATION OF THE SOILS, HERBAGE, &c. OF THE SOUTHERN STATES TO SHEEP HUSBANDRY. 1. OF THE LOW OR TIDE-WATER REGION.

Natural Features of the Southern States—Divided into three Zones...The Natural Features, Soils, &c. of each...The Tide-water Zone—Its destination of Artificial Pastures and Meadows...Causes—Small amount of Domestic Stock kept—Unsuccessful Experiments in raising Clover and Grasses...Reasons why those Experiments were unsuccessful—Land too much Exhausted by Severe Tillage—System of Tillage compared with that of the Grazing Regions of New-York—Experiments unsuccessful, also, because improper varieties of Clover and Grass were tried...Much of the Land adapted to Grass—Shown by its Natural Pastures—Statements of Col. Allston—Opinions of Mr. Ruffin—of a Committee of the S. C. Agricultural Society...Land compared with that of Flanders—also with some parts of New-York...Climate perhaps unfavorable to certain Northern Grasses and to Red Clover—Opinion of Mr. Ruffin—Statements of Milton (S. C.) Agricultural Society...Clover not indispensable...Experiments suggested...Valuable indigenous and acclimated Grasses—Crab Grass—Millet—Bermuda Grass—its great value—Statements of Mr. Affleck...Peas—Their great value in the Southern States as a Green Crop—Manure—Sprengel's Analysis of them—The Value of their Straw as a Manure compared with various substances—Table of the Value of Manures by Payen and Boussingault...Oats, Rye and Barley—Corn Blades—Sweet Potatoes...Conclusions from foregoing.

Dear Sir : Having discussed, in my previous letters, the effects of warm climates and some of their incidents, on the health of sheep, and on the quantity and quality of their wool, we come now to the second branch of my original inquiry—Is there anything in the natural features, soils, herbage, &c. of the Southern States, which unfits them for a natural and easy adaptation to sheep husbandry ?

The vast region south of the Ohio and Potomac, and west of the Mississippi—comprising an area considerably exceeding that of France, Spain and Portugal*—is distinguished, by its natural features, into three distinct zones, parallel to each other and to the Atlantic coast.

The lower or tide-water zone, which skirts the Atlantic, is a low, flat, sandy, and oftentimes marshy plain, from 50 to 100 miles wide, comparatively recent (tertiary) in its formation, and covered with pine forests over the greatest portion of its extent. The soils on the dry lands are generally light, and sometimes too sterile to admit of profitable cultivation ; that in the swamps and river bottoms, where the sand is replaced by a rich alluvion, is exceedingly fertile. The middle or hilly zone rises from the level of the preceding, first into gentle hills, and finally into high and oftentimes broken ground, as it approaches the mountains. The width of this does not greatly vary from that of the preceding. The formation is almost exclusively primary ; † and the soil varies, sometimes being poor, but more generally ranging, in its natural state, from medium to highly fertile. The forests consist of oak and other deciduous trees. The third or mountain region is formed by the different chains and groups of the great Appalachian range of mountains, and occupies not far from 70,000 square miles of the central portion of the territory under consideration.‡ It comprises the middle of Virginia, the west of North Carolina and South Carolina, the north of Georgia and Alabama, and the east of Tennessee and Kentucky. Its formation on the eastern declivities of the Blue Ridge (the most eastern chain) is primary, and thence to the Alleghanies the rocks belong to

* Spain contains 170,000 square miles, Portugal 40,000, France 200,000—in all 410,000. Allowing 10,000 square miles of Louisiana to be east of the Mississippi, the area of the region referred to is 456,000 square miles.

† There are one or two interrupted belts of *new red sandstone*—vide McClure.

‡ Estimated not far, I think, from correctly, by myself. I can find no authority on this point.

the Transition order.* Its soil varies from thin and light to that of exuberant fertility. West of the mountains, the hilly zone rests on Transition rocks and coal measures, and is succeeded west and south of Virginia by the vast rolling or level plains which extend to the Ohio and Mississippi; and which, instead of the silicious sands of the eastern coast, exhibit rich and varying soils resting on limestone and other Transition rocks. In Virginia, the hilly region, which is one vast coal measure, extends to the bottom lands of the Ohio; and its soils, taken as a whole, range from ordinary to meager.†

We will now proceed to examine the capabilities and adaptation of each zone, separately, for the purposes of sheep husbandry. It has already been shown that sheep are healthy, and produce as heavy, and *may be made* to produce as fine fleeces as elsewhere, in the tide-water zone. They are easily kept—finding, in a climate so mild, considerable succulent food even in the winter; and, south of North Carolina, large numbers would subsist during the entire winter on the hardier wild herbage which continues green in the forests and swamps. If this region was stocked with sheep, to the extent alone to which they could find subsistence, summer and winter, on wild herbage—or, in other words, get a living without costing their owners anything—the present number would be largely increased, and their wool and mutton would add materially to the annual income of the owners of the soil. But a better system would undoubtedly be not to depend upon wild herbage alone, but to have pastures or sheep-walks seeded with the best grasses which will flourish on them, and provision made for a quantity of dry fodder, or some substitute for it, for winter use.

Can this summer and winter feed be produced, in the region under examination, to any considerable extent, at an expense which would render its conversion into wool and mutton profitable? There are patches of good natural pasture in many parts of the tide-water zone, apart from the salt or fresh water marshes. But artificial pastures and meadows have rarely been attempted. The planters in this portion of South Carolina, for example, actually import hay! “Many of the cotton and rice planters . . . in some cases buy hay from New-England. . . . Northern and (in some cases) European hay is even carried up to supply Augusta and Columbia, along rivers which flow through swamps covered with natural grass, so rank and luxuriant as to be almost impenetrable.”‡

This neglect of grass culture springs from several causes. Little farm-stock, comparatively speaking, is reared or kept by the rice and cotton-planters, from the fact that most of the labor on such plantations is performed by men; and the few animals kept are fed on wild herbage, or the offal of crops which are raised for other purposes. The carriage and draught horses and mules are fed in the winter on the leaves or “blades” of corn; and the neat stock get their living in the swamps, and in the corn fields, where the greatest portion of the stalks are usually left standing.

Nor is it to be denied that various unsuccessful experiments have been made in the cultivation of the grasses and clover, which have discouraged farther efforts, and led many to infer that the soil or climate, or both, are decidedly uncongenial to them. That the soil or climate is as favorable to the production of rich, thick swarded pastures or meadows, as in many

* So termed by Werner. Though little used now by geologists, I resort to it as the shortest descriptive epithet which will include all these rocks, unless it be the Hemiliayan of Brongniart, the Submedial of Coeybeare, or the Graywacke of De la Beche—neither of which is so familiar, nor, it appears to me, any better. The Transition rocks are equivalent to both the Cambrian of Prof. Sedgwick, and the Silurian of Mr. Murchison—whose nomenclature is adopted by Lyell, Phillips, Mantell, &c.

† Dr. Morse, Mitchell, &c.

‡ Rullin's Agricultural Survey of South Carolina, 1843, p. 73

parts of the Northern States, I do not contend. Some of these soils are doubtless, naturally too barren to be made to produce good yields of grass, without an expenditure which would more than counterbalance the profits accruing from them. Others have been sunk nearly to the same level by wasting and improvident tillage; and it is on lands of the latter class, mainly, that the experiments in introducing the grasses and clover have been made. As long as they would produce cotton or corn, these crops were annually taken from them, with perhaps an occasional year of rest (i. e. lying without any crop being sown on or taken from them); and, when reduced to such a degree of barrenness that the crop fell short of repaying the cost of producing it, clover or grass was resorted to in the vain hope of suddenly repairing, through their instrumentality, the ravage and desolation of years. The following is from the report of a Committee of the Fishing Creek Agricultural Society, Chester District, South Carolina, made to the President of the State Society in 1843; and, though this district is not in the tide-water zone, the system of cropping described is more or less the prevailing one* throughout much of the cotton growing region:

"We generally plant cotton on fresh land four or five years in succession—then corn—then wheat or oats—again corn and cotton; and, after it will produce little else, we sow it in rye, and let it rest two or three years. There are no fixed principles observed in the rotation of crops. . . . We have no data whereby to fix the expense of cultivation accurately. We know this, however, that at the price of produce for the last two or three years, we are sinking money."†

I ask what would be expected, in the way of grass or clover, from some of the best grazing lands of New-York, after being cropped with grain crops from ten to twelve years consecutively, with little or no manure?—However carefully seeded with the best grasses, or with clover, they would not form meadows worth mowing, nor pastures where an acre would summer a sheep—though, as now managed, an acre is poorly grassed that will not summer five or six sheep. Take the map of New-York, Sir, and draw a right line from Buffalo to a point a little south of Albany—say Coxsackie—and all the region, speaking in general terms, south of this line and west of the Catskill Mountains, is mainly devoted to grazing. It is the best grazing region of the State, and much of it is equal to any in the Northern States. The best farmers in no part of it take off to exceed three grain or root crops before seeding down to grass; and, unless the soil is unusually rich, it is customary to give barn-yard manure to one of these crops. This is almost invariably the case where the land was in meadow when broken up. Where no manure is given on meadow lands, or even on lightish pasture lands, two grain crops are considered sufficient by the most provident farmers—it being an axiom among such, that all ordinary or thinnish soils should be nearly or quite as rich when seeded down as when broken up. In other words, they draw from the soil only what is equivalent to the strength or fertilizing properties of the sod, and of the manure given.—When seeded down to grass, these lands are usually depastured by cattle or sheep several years before they are again broken up. If converted into meadow, they are top-dressed from time to time with gypsum, and sometimes with stable manures.‡ The poorest soils, rocky hill-sides, declivities much subject to washing and gullying, are rarely broken up after being once properly seeded down. I repeat it, Sir—take all the grazing lands of New-York, and crop them as severely as it is reported above to be done in Chester District, South Carolina, and they would become so sterile that,

* *Id est*, so far as constant cropping without returning anything to the soil is concerned.

† See Ruffin's Agricultural Survey of South Carolina, 1843—Appendix, p. 6.

‡ It is not considered good economy, however, to top-dress any meadows with stable manures which are dry and arable, and can thus be subjected to the regular rotations of the farm.

unless resuscitated by copious applications of manure, they would not yield grass enough to pay the expense of keeping them under fence, until they had lain waste for a quarter of a century.

Another cause of the failures which have attended some of the efforts to introduce the culture of clover and the grasses on the tide-water zone, in the Southern States, may, and probably has, existed in the improper selection of the varieties sown. As the first crop on a very meager soil—red clover, for example—is not appropriate in any region. In Flanders, the natural soils of much of which so closely resemble those of the zone under examination, it is not sown until the land is enriched and got in condition by several preparatory crops.* The different grasses seem to be affected by various conditions in the soil or atmosphere, or both, which it is frequently difficult or impossible to detect. Timothy grass (*Phleum pratense*) is decidedly the favorite meadow grass of the grazing regions of New-York. White clover (*Trifolium repens*) invariably comes up spontaneously on those lands. Red clover (*T. pratense*) is sometimes sown with Timothy in meadows, and generally in pastures. Red Top* (*Agrostis (stricta) vulgaris*) is preferred on wet lands, where it comes up spontaneously. It is considered a prime pasture and meadow grass in such situations. June or Spear grass (*Poa pratensis*), the Blue grass of the Southern and Western States, so prized there and also in England,† is considered an unprofitable intruder in our meadows, where it comes up spontaneously, and ultimately drives out the Timothy. The meadows are then said to be “run out,” and are broken up. I have never known the seed of this grass sown in a single instance! The favorite Rye grasses of England (*Lolium perenne* var. *bienne*), Lucern (*Medicago sativa*), Sainfoin (*Hedysarum onibrichis*), Orchard grass (*Dactylis glomerata*), and various others equally celebrated in England and on the Continent, have been tried in New-York, and the experiments are generally regarded as decided failures. None of them, at all events, have obtained a footing among the grasses sown by our best farmers. On the other hand, the Red Top of New-York is but little regarded in England,‡ and Timothy was not in much better repute until the Woburn experiments demonstrated its great value for hay. Even now it is considered inferior, in general value, to many other grasses.|| All this goes to show that even the hardiest grasses have their favorite situations; and that we are not authorized to pronounce against the practicability of forming pastures and meadows in a given region, because we have failed in a trial with two or three grasses, out of a list of as many hundreds.

It has already been remarked that there are patches of good natural pasture on the dry as well as the wet portions of the tide-water zone. These are frequent and extensive, and could be rendered infinitely more so by simply clearing the land. In your Memoir on the Cultivation of Rice, furnished to Mr. Ruffin, while making the Agricultural Survey of South Carolina, in 1813, you say :

“At first, rice was cultivated on the high land, and on little spots of low ground, as they were met with here and there. These low grounds being found to agree better with the plant, the inland swamps were cleared for the purpose of extending the culture. In the process of time, as the fields became too grassy and stubborn, they were abandoned for new clearings; and so on, until at length was discovered the superior adaptation of the tide-lands, and the great facilities for irrigation afforded by their location. For these, the inland plantations were gradually and slowly abandoned, until now, that the great body of land, which

* Sometimes known as “Upright Bent grass,” and in the Southern States as Herds-grass.

† Pronounced by Sole the best of all the grasses.

‡ *Agrostis vulgaris* is pronounced “a worthless or rather a mischievous plant,” by Sir George Sinclair!

|| “Our opinion,” says Loudon, “is that neither Timothy nor (some other grasses named) is ever likely to be cultivated in Britain.”

little more than a century ago furnished for exportation over 50,000 barrels of rice, now lies utterly waste, constituting, where trees have not overgrown it, the finest natural pastures which could be desired.”*

Mr. Rufin in his Report of the Survey, of the same year, asserts :

“ Few countries possess greater natural facilities, or which are more improvable by industry, for producing in abundance, grass, hay and live-stock, and their products of meat, milk and butter, all of which are now so deplorably deficient.”†

The Committee appointed by the State Agricultural Society of South Carolina to take into consideration the scheme of reducing the quantity of cotton grown,‡ in their Report observe :

“ Millions of acres in South Carolina, including the lower country, are admirably adapted to the raising of rich grasses. This might be added as another branch of industry, from which reasonable profits could be realized, and might very well be added to the cotton planter's income.”

Corresponding statements, on equally indisputable authority, might be indefinitely multiplied, not only in relation to that portion of the tide-water zone lying within the limits of South Carolina, but in all the Southern States. South Carolina occupying a central geographical and latitudinal position, in reference to this zone, and its soils on it, about averaging, so far as I can learn, with that of the other States, it is not necessary to pursue the inquiry.

Where fine natural pastures spring up spontaneously on deserted lands, more or less impoverished—probably in most instances considerably so—how little difficulty would there be in forming, almost immediately, the best artificial pastures and meadows on millions of acres of just such land, (only that it is in its virgin state, and consequently far better,) now in unproductive forest ! And how small would be the amount of skill requisite to convert millions of acres more of cotton lands—which do not now yield remunerating crops—into pastures and meadows, which, as I shall show, would yield their owners a handsome remuneration !

And the culture of the grasses need not stop with these comparatively good and medium lands. They can be made to stretch their carpet of green over the poorest of your sands—over those now covered with stunted pines, or which, scorched and naked, reverberate back fiercely the burning heat of a southern sky.

There are few regions in the tide-water zone possessing poorer soils than some cultivated portions of New-York. In the vicinity of Albany, (between that city and Schenectady, for example,) the same loose, silicious sands, the same, though perhaps rather more stunted, growth of pines, would almost compel you to fancy yourself somewhere between Richmond and Wilmington, on the route of the great Southern Railroad ! Denuded of their meager covering of dwarf pines, and the cohesion produced by their interlacing roots, these sands would be lifted and driven about by the winds. Yet on such a soil as this, you find the farm of the late celebrated Jesse Buel ! And fertile grass fields, dotted here and there with splendid mansions, are every year stretching out farther and farther among the arid sands. How are these rapid transformations in the fertility of the soil accomplished ? The stables, and mews, and cesspools of Albany can give the answer !

The following description of the natural soils of Flanders, now proverbial for its fine crops and rich pastures and meadows, is from the pen of that able English agricultural writer, Rev. W. L. Rham :

* Agricultural Survey of South Carolina, 1843. Appendix, v. 14.

† Ib. p. 73.

‡ The Committee consisted of Whitemarsh B. Searbrook, Esq., John B. O'Neill, Esq., and W. J. Allison Esq.—and the Report was made, I believe, in January, in 1846.

"The greater part of the land in Flanders is naturally poor; and in extensive districts, which now have the appearance of the greatest richness at harvest time, the original soil was once little better than the blowing sands which are met with in the neighborhood of the sea. Neither is it a genial climate which brings forward the fruits of the earth in abundance; for the climate is inferior to that of France or the southern parts of Germany. The soil may be divided into two classes. The first consists of the alluvial clay loams near the coast; the second, of various sands and light loams which are found in the interior. The most fertile is that of the low lands which have been reclaimed from the sea by embankments; it is chiefly composed of a muddy deposit mixed with fragments of marine shells and fine sea sand. . . . In the interior of East and West Flanders the soil varies considerably; but the principal part is of a sandy nature. The sand, and a heavier loam which scarcely deserves the name of clay, are found much intermixed, which is owing to an alternation of layers of sand and loam, which are found by digging to a considerable depth. These layers are not of great thickness, and the accidental circumstance of the washing away of the sand in some places and the depositions from rivers in others easily account for this variety. Some of the elevations, which are nowhere considerable, consist of a very poor sand, and suggest the idea of their having once been the sands of the sea blown into hills, as is observable on the coast. These hills, if they may be so called, are naturally so barren that they were, not very long since, covered with heath, or at best planted with fir trees; but they have gradually been cultivated and improved, and only a few remain in their original state of heath and wood. The poorer sands have been brought into cultivation chiefly by the persevering industry of small proprietors and occupiers."

Have we not here a good general description of much of our southern Atlantic coast—the tide swamp and sandy plain—and even a graphically minute account of the "Sand Hill" region of South Carolina?

Instances of the reclamation of such lands might be indefinitely multiplied.

I do not offer the above facts to prove that it is either profitable or expedient to reclaim all the sterile lands of the southern sea-board by the same means that have been resorted to about Albany, or in Flanders. Except in the vicinity of cities, where manures are plentiful and cheap, and uncommon market facilities are offered, it would not be profitable, unless it can be accomplished by less expensive means.

But it proves one and an important position: that it is the sterility of such soils—or perhaps their loose and "blowing" character in some places, their sun-baked hardness in others—which prevents them from spontaneously producing esculent herbage; and nothing in them, as has been frequently fancied, positively deleterious to vegetation. And it follows, hence, that whenever it is *profitable* to convert them into grass lands, it is *practicable* so to do by the proper application of manures. But do I hear some of your South Carolina neighbors, of the anti-improvement school, (if you have any such,) say, "If our *soils* are, or can be made, generally, suitable for the production of the grasses, our *climate* cannot!" This position is obviously incorrect, as warmer climates, as, for example, Australia, the Cape of Good Hope, and various others, produce, where the soils are favorable, a luxuriant growth of grasses; and South Carolina herself, as has been already shown, produces them bountifully in situations where neither the latitude nor the elevation abates one jot of the heat of your fervid climate.

It is not impossible that the climate of the States farthest south—south, say, of North Carolina—may be unfavorable to certain grasses and clovers; and perhaps so to the favorite ones of the Northern States. In relation to red clover, however, the acclimation of which is regarded by many as so important to those States, it seems Mr. Ruffin thought otherwise. He says:

"Perennial, or other permanent grasses, of which, doubtless, there may be found some peculiarly suited to the warm climate, (South Carolina,) would still more serve to give the great benefits of changed condition to the fields, independent of the much needed benefits of grass husbandry for feeding of live-stock and giving rest and manure to the land. The grasses whose value has been fully established by long experience in more northern coun-

tries, should be tried—not because they are from the North, (which in itself is a strong objection,) but merely because their good qualities are known, and possibly some such grasses may as well suit a more southern clime. And such, I trust, is red clover, the best of all green and manuring crops. For although this was long held to belong to the North only, I have fully experienced that its locality and the perfection of its growth *are fixed much more by peculiarity of soil than by latitude*. Not more than twenty years ago it was as general a belief in *Lower Virginia*, as now in South Carolina, that there the soil was too scanty and the sun too hot to raise red clover. But since marling and liming have made many of these soils calcareous, it is found that neither the sudy soil nor hot and dry climate forbid the raising excellent and profitable crops of clover. And so hereafter it will be found in South Carolina.”*

In a Report by a Committee of the Milton Agricultural Society, (embracing adjacent parts of Laurens and Newberry Districts, S. C.) made to the State Society in 1843, they state :

“ Our native grasses, except the crab grass, are of the poorest kind, principally sedge. Of the artificial grasses, some trials have been made with red clover and herds-grass.† On rich lots the first appears to succeed very well. For alternating with tillage crops we do not know of its having been tried; but our impression is, that without manuring more highly than is customary here, it will not answer. We are not aware that it has ever been sowed with gypsum. The herds-grass, as far as it has been tried, appears to succeed very well on the bottomas that border our branches and creeks.”‡

Lawrence and Newberry are not in the tide-water region, but so far as the effect of climate alone is concerned, their testimony has an equal bearing.

I have little doubt that red clover may be cultivated on good, rich soils even in the States south of North Carolina, and may possibly become, under some circumstances, a profitable crop in their rotations; but, as has been already remarked, it will not do as a *first* crop on very meager soils, in any climate—and still less so, I apprehend, on such soils south of latitude 31°. It is not, therefore, the crop which you need, to *cheaply* ameliorate your poor and exhausted soils, to fit them either for grazing or for tillage. Grant that such soils can be fitted to produce it, as Mr. Ruffin suggests, by the application of lime or marl,|| these manures will be found expensive, can be but slowly obtained in quantities sufficient to apply to large tracts, and, besides, when the soil is sufficiently ameliorated to carry clover, it will carry most if not all of your ordinary tillage crops. Though clover would aid materially in the rotation, in *sustaining* or even improving the fertility superinduced by lime or any other fertilizer, it is not, and cannot be made the *original* fertilizer on the sterile sands of warm climates. When we talk, therefore, of the initiatory steps by which such soils shall be brought from a state of barrenness to a state of production, clover does not come within the category of appropriate agents.

Though red clover ranks in the first class, if not the first in that class, on appropriate soils, as a grazing and manuring crop, I have never regarded it as indispensable—as what the *lawyers* would style a *sine qua non*—even in *sustaining* fertility anywhere except on rich calcareous wheat lands, where a severe and exhausting rotation is resorted to. Where wheat is taken from the soil *at least* every alternate year, for ten, fifteen, or twenty years, without any manure, excepting the intervening crop, and the droppings of animals depastured on it, clover will *better* sustain the land in the ultimately fatal struggle, than perhaps any other green ma-

* Ruffin's Agricultural Survey of S. C., 1843, p. 81.

† This should be the *Agrastis stricta* or *vulgaris*—the Red Top of the North. Some writers designate it as the one species, some as the other.

‡ Ruffin's Agricultural Survey of S. C., 1843; Appendix, p. 9.

|| Unless, however, the soil contains more *organic* matter than I suppose to be the case with many of your *sandy* soils, theory and practice both show that lime will not prove the proper manure. Though exceedingly valuable in its place, experience shows that it is no agricultural panacea. I shall allude to this subject more fully in a subsequent letter.

nuring crop. But on the silicious grazing soils of Southern New-York, it is rarely used exclusively as a marning crop, and is but little used, excepting slightly admixed with timothy, for pasture or meadows.* I think it should be used more; but the fact stated shows that clover is not regarded by practical men, who are perfectly familiar with it, as that indispensable crop, in all situations, which some of its more extravagant panegyrists would lead us to suppose. The conclusions which I would have you deduce from the above facts and statements are, simply, that if clover is found to flourish with you without extra trouble and expense, you will do well to make use of it in your rotation; if not, it is chimerical, in my judgment, to engage in an expensive struggle with natural disadvantages to force its cultivation.

The herds-grass (red top) spoken of by the Milton Society, is a good grass on moist (but not boggy) soils, and having been found to succeed with you, is worthy of trial in such situations, but on dry soils, especially on arid sands, it would entirely fail. Nor have I much confidence in either timothy or spear (blue) grass, in such situations, in your latitude—none at all in the former.

It would be well, probably, to try limited experiments with all grasses, domestic and foreign, which have succeeded well on *soils similar to your own*; as among these, some may be found which disregard climate, or are even better fitted to your climate than their indigenous one, as was the case with timothy at the North. The same remark is also true in relation to certain other esculents which are used as substitutes for the grasses, and for green marning crops.†

Notwithstanding the evident propriety of such experiments, I am strongly inclined to the opinion that it is to your own native grasses and esculents, or those of some kindred climate, you must look mainly for the basis of your grazing husbandry—and through this, the amelioration of your poor and exhausted soils.

I regret that I can find no list of those native grasses which sward over the deserted lands of the tide-water zone, and flourish with a tropical luxuriance in its swamps. You allude to them as ‘native’ grasses, so does Mr. Ruffin. Mr. Seabrook, in his Report on Cotton Culture,‡ speaks of ‘‘crop grass,’’ by which I suppose he means Crab grass, (*Panicum sanguinale*,) coming up spontaneously after spring-sown peas; but farther than this, neither of you specify varieties.|| Among these indigenous ones, particularly those which spontaneously make their appearance on dry lands, it would be exceedingly singular if there are not several very valuable grasses *for your soils and climate*—grasses the seeds of which should form a part, if not suitable for the whole sowing, on the same kinds of soils on which they are found flourishing.

Crab grass grows in all parts of the southern States, and is a fair, though not a *very* superior pasture and meadow grass.

Golden millet (*Panicum milliaceum*) is a great producer and withstands

I know of but very few farmers excepting myself, in this, (Cortland,) one of the best of the grazing counties, who sow unmixed clover seed. I confess myself decidedly partial to the crop. You may ride ten miles or more in many directions from my house, where half and frequently more than three-fourths of the fields are in pasture or meadow, without observing five acres of unmixed clover.

† See Appendix, A.

‡ For this elaborate and exceedingly able Report or Memoir, see Farmers' Library, 1845, October, November and December Nos.

|| Since writing the above, I have received from a South Carolina correspondent the following list of grasses and other esculents which flourish in the lower part of that State. Crab grass (*Digitaria sanguinalis*), earlier—the ‘‘Crowfoot’’ (*Elysiue Indica*), a little later, are, he says, the best grasses for hay, and thrive in cultivated grounds from the month of June till frost. The ‘‘Wild Okra’’ (*Viola palmata*), the ‘‘Partridge Berry’’ (*Mitchella repens*), the Wild Pea Vine, and several other esculents, obscure and unknown by name, flourish in most natural pastures from early spring till November.

a warm climate, but it requires a good soil. It has been cultivated with great success by Mr. Affleck in (Adams county) Mississippi.

Bermuda grass* (*Cynodon dactylon*) I have been led to consider, from the representations of Mr. Affleck, as the best grass, both for pasture and meadow, on the sterile sands of the tide-water zone. If half this enthusiastic admirer believes of it is true, it is of inestimable value to the South, and for permanent pastures and meadows, is by far the best grass in the United States. Mr. A. says :

"We are fully aware of all the objections made to the spreading of this grass, and have a practical knowledge of all the trouble it occasions; and having also had several years' experience of its great, its incalculable value, we have no hesitation in stating that the latter is manifold greater than the former. The time is not far distant when all the rough feed consumed on plantations will be made from this grass; and when the planter will consider his hay crop as of much more importance than his sugar or cotton. . . . The excellence of this plant for pasturage is evinced by two circumstances. It is preferred by stock of every description to all other grass, and it grows luxuriantly in every kind of soil. It possesses an additional advantage, that of binding the loosest and most barren sandy tracts. But when it has once taken possession of close, rich soil, its extirpation is so difficult as almost to defy all the skill, industry and perseverance of farmers. It is used to bind the levees on the banks of the Mississippi, and of railroads. We saw it at Macon, Geo., Charleston, S. C., and so on, as far north as City Point, Virginia, where it partially covers the wharf. One hundred pounds of grass afford *upward of fifty of dry hay*; and *we do cut*, as a regular crop, five tons of hay per acre each season. Were we to state *how much more* has been cut, we might strain the belief of our readers. No other grass will yield such an amount of valuable hay; surpass it in nutritive qualities; support on an acre of pasture such a quantity of stock; will improve the soil more quickly; or so effectually stop and fill up a wash or gully. But, on the other hand, its *extirpation*, when once well established, is almost impossible; though to check and weaken it, so far as to grow a grain or cotton crop, is easy enough. To do this, pursue the course of the best farmers of Kentucky in their management of a blue-grass sod—with a good breaking plow, having a wheel and coulter, and a stout team, turn over evenly and nicely a sod four inches thick and as wide as the plow and team are capable of, follow in the same furrow with another plow which casts the dirt well, and throw out as much of the fresh earth on top of the sod as possible or the depth of the soil will admit of. The crop that follows can easily be tended without disturbing the sod, and its gradual decay will greatly increase whatever crop may be planted on it—and that should be a shading one, corn and peas or pumpkins, or winter oats followed by peas. Good farmers will understand that heavy crops of hay cannot be removed, for many successive years, from any land, without some return in the shape of manure. To the careful, judicious farmer, who wishes to improve his land and his stock, and who does not expect to grow any crop without trouble, and who uses good plows, and keeps a stout team and that in prime order, we earnestly recommend to try an acre or two of this grass, in a situation where it cannot readily spread. To the careless farmer we say, touch it not."

The same gentleman writes me under date of Dec. 10th, 1846 :

"Bermuda grass well set, which affords the finest and most nutritious pasturage I have ever seen, will keep almost any number of sheep to the acre—three or four times as many as the best blue-grass!"

Unless this is gross and willful exaggeration,‡ here you have a grass which is not only highly palatable and nutritive, but which will yield more than double both of pasturage and hay, than the best grass or clover of the Northern States!|| It has been tried as far south as New-Orleans, and the climate found no detriment to it. It will flourish on dry and almost barren sands.§ What can the farmer on the dry lands of the tide-water zone ask more? Its inextirpable character I regard as decidedly in

* Cumberland Grass—Wire grass of Virginia—Creeping Panic grass.

† See Norman's Southern Agricultural Almanac, for 1847.

‡ Neither of which are we permitted to suspect, from the well-known character and intelligence of Mr. Affleck.

|| People here in the North sometimes talk of getting three tons of timothy and four tons of clover (at two cuttings) per acre, but it is not done on one acre in ten thousand, on the best meadows! Two tons is a good, and by far above a medium yield, of timothy, and three, of clover. The large amounts of Bermuda sometimes cut, which Mr. A. does not mention for fear of "straining the belief of his readers," he has stated to me personally, to be *eight tons!*—equivalent to the yield of *three* first-rate acres of timothy on the best grazing lands of Southern New-York.

§ Mr. Affleck informs me he has repeatedly seen it growing well in such situations.

its favor on millions and millions on the thinner and poorer soils of that zone—as once admitted, it will put an end to the unprofitable tillage practiced on them, and remove all temptation to resort to it on others, as they are gradually rescued from barrenness. It will thus compel the adoption of that pastoral system which can alone make these lands profitable, or save them, if the forebodings of those who have been reared on them and are deeply attached to them, can be credited, from ultimate desertion.*

You have another fodder crop—and which may be made a green manuring one, in no respect inferior to clover. The pea is to the South what clover is to the North.† There is something in your soil or climate, or both, which seems to be specifically adapted to the development of this plant—for it flourishes with you under a much greater variety of soils and circumstances than at the North. A leguminous plant, like clover, it draws much of its aliment from the atmosphere; and it is perhaps as sensibly affected by the same cheap manure, plaster. Its haulm or straw, if cut and cured greenish, and well taken care of, makes a good, rich fodder relished by all kinds of stock. Peas are greedily eaten by neat stock, swine, and sheep, for which they form a healthy and highly nutritious food. The white field pea of the North is considered equivalent to our corn,‡ by measure, in fattening swine. For sheep, and particularly for breeding ewes, there is probably no feed in the world equal to nicely cured pea haulm,|| with a portion of the seed left unthreshed.§ It gives them condition and vigor—and prepares them to yield a bountiful supply of rich milk to their young.

Though the pea is an annual, it becomes in effect a perennial, South, when it is desired, by suffering it to stand until some of the grain shells out.¶ It will mature in a southern climate, sown late in the summer, so that one, and even two preceding crops of it might first be plowed in as a manure. It will ripen among Indian corn, sown after that plant has ceased to grow, and there have been successful experiments of sowing it late with wheat, oats, &c., to have it obtain its growth (to be plowed under as manure) after those crops have been harvested.

Sprengel gives the following analysis of the pea. 1,000 parts in the common dry state yield—

| | Seed. | Straw. | | Seed. | Straw. |
|------------------------|-------|--------|-----------------------|-------|--------|
| Potash and soda..... | 15.50 | 2.35 | Sulphuric acid..... | 0.52 | 3.35 |
| Lime and magnesia..... | 1.95 | 30.70 | Chlorine..... | .35 | 0.00 |
| Phosphoric acid..... | 1.90 | 2.40 | Silica, iron, &c..... | 4.40 | 10.85 |

* Statements of this kind have been repeatedly made in the pages of the Monthly Farmer by southern gentlemen.

† I had labored under the impression that the so-called *pea*—cultivated as a manuring crop in the Southern States, was in reality a variety of the *bean*; but Mr. Ruffin in his Agricultural Survey of South Carolina, (see Report of 1843, p. 81.) and Hon. W. B. Sealbrook in his Memoir on Cotton Culture, (see Monthly Journal of Agriculture, Dec., 1845, p. 287.) speaks of this crop—the former again and again—as *peas*, without the qualification which would be expected from gentlemen of so much learning, in case they were speaking of a plant by a vulgar misnomer, instead of its real name. The peculiar value of the crop at the South in the particulars described, I find asserted by Mr. Ruffin, Mr. Afleck, and various other writers and Agricultural Societies, in the strongest terms, and therefore it makes little difference, practically, whether the name is correct or not, but if not, the following analyses, &c., are misplaced. The bean resembles the pea in its qualities and value, but is rather inferior to it. See Appendix, B.

‡ The small, hard corn of the North contains more nutriment per bushel than the large southern corn.

|| That is, cut and cured so that it will come out of the stock or mow bright, and with the leaves looking green—instead of having the ferruginous hue of over-ripe clover.

§ If cut greenish and well cured, the greener pods will not thresh out readily, and then they are in exactly the proper condition for breeding ewes. If the crop is very light, cut it when all the pods are quite green, and feed it out without threshing.

¶ This is, however, poor economy in any case. If the object is peas, it is wasteful to the crop, and the quantity sown is uncertain; besides, the haulm is ruined for fodder. If the object is manure, the loss is still greater. Plants in drying lose the nitrogen contained in their sap, give up their saline matters, and are resolved more or less completely into carbonic acid, which escapes into the air, and is so far lost."—See Liebig on this subject, and also the clear and able remarks of Johnston, (Johnston's Agricultural Chemistry, vol. ii. p. 176, *ut supra*.)

The following table of the comparative value of manures, deduced from analyses made by Payen and Boussingault, will show the remarkable comparative value of the pea as a manuring crop, and it will be found otherwise useful for reference :

TABLE No. 4.

| Kinds of Manure. | Water
per 100. | Nitrogen in
100 of matter. | | Quality
according to
state. | | Equivalent
according to
state. | | Remarks. |
|--------------------------------|-------------------|-------------------------------|-------|-----------------------------------|-------|--------------------------------------|------|---|
| | | D. y. | Wet. | Dry. | Wet. | Dry. | Wet. | |
| Farm yard dung..... | 79.3 | 1.95 | 0.41 | 100 | 100 | 100 | 100 | Average of Bechelbronn. |
| Dung water..... | 99.6 | 1.54 | 0.06 | 72 | 2 | 127 | 68 | Washed by the rain. |
| Wheat straw..... | 19.5 | 0.30 | 0.24 | 15 | 60 | 650 | 167 | Fresh of Alsace, 1838. |
| Rye straw..... | 12.2 | 0.29 | 0.27 | 10 | 42.5 | 975 | 235 | Of Alsace. |
| Oat straw..... | 21.0 | 0.33 | 0.28 | 18 | 70 | 542 | 143 | do. |
| Barley straw..... | 11.6 | 0.26 | 0.23 | 13 | 57.5 | 750 | 174 | do. |
| Wheat chaff..... | 7.6 | 0.94 | 0.85 | 48 | 212.5 | 207 | 47 | do. |
| Pea straw..... | 8.5 | 1.95 | 1.79 | 100 | 447.5 | 100 | 22 | do. |
| Millet straw..... | 19.0 | 0.96 | 0.78 | 49 | 195 | 203 | 51 | do. |
| Buckwheat straw..... | 11.6 | 0.54 | 0.48 | 27 | 120 | 361 | 83 | do. |
| Dried potato tops..... | 12.9 | 0.43 | 0.37 | 22 | 92.5 | 453 | 108 | |
| With'd l'ves of beet-root..... | 88.9 | 4.50 | 0.50 | 230 | 125 | 43 | 80 | Of mangel-wurzel. |
| Do. of potatoes..... | 76.0 | 2.30 | 0.55 | 117 | 137.5 | 85 | 73 | Withered top and leaves |
| Do. of carrots..... | 70.9 | 2.94 | 0.85 | 150 | 212.5 | 66 | 47 | |
| Do. of heather..... | 7.0 | 1.90 | 1.74 | 97 | 425 | 103 | 23 | Dried in the air. |
| Do. of oak..... | 25.0 | 1.57 | 1.18 | 80 | 293 | 125 | 34 | Leaves fallen in autumn. |
| Do. of poplar..... | 51.1 | 1.17 | 0.54 | 66 | 134 | 167 | 74 | do. |
| Do. of beech..... | 39.3 | 1.91 | 1.18 | 78 | 294 | 102 | 31 | do. |
| Clover roots..... | 9.7 | 1.77 | 1.61 | 90 | 402.5 | 110 | 25 | Dried in the air. |
| Burned sea-weed..... | 3.8 | 0.40 | 0.38 | 20 | 95 | 488 | 105 | |
| Oyster shells..... | 17.9 | 0.40 | 0.32 | 20 | 80 | 488 | 125 | |
| Sea shells..... | | 0.05 | 0.05 | 3 | 13 | 3750 | 769 | Dried sea shells of Dunkirk |
| Sea side marl..... | 1.0 | 0.52 | 0.51 | 26 | 128 | 377 | 78 | |
| Solid cow-dung..... | 85.9 | 2.39 | 0.32 | 117 | 80 | 84 | 125 | |
| Urine of cows..... | 83.3 | 3.80 | 0.44 | 194 | 110 | 51 | 91 | |
| Solid horse-dung..... | 75.3 | 2.21 | 0.55 | 113 | 137.5 | 88 | 73 | |
| Horse urine..... | 79.1 | 12.50 | 2.61 | 641 | 652.5 | 15.1 | 15.1 | The horse drank but little, the [urine was thick. |
| Pig dung..... | 81.4 | 3.37 | 0.63 | 172 | 157.5 | 58 | 63 | |
| Sheep dung..... | 63.0 | 2.99 | 1.11 | 153 | 277.5 | 65 | 36 | |
| Pigeon dung..... | 9.6 | 9.02 | 8.30 | 462 | 2075 | 21.2 | 5 | Of Bechelbronn. |
| Guano..... | 19.6 | 6.29 | 5.00 | 323 | 1247 | 31 | 80 | Imp. into Eng. in its ord. state. |
| Do..... | 11.3 | 15.73 | 13.95 | 807 | 3487 | 12 | 28.2 | Imp. into France, do. |
| Fresh bones..... | 30.0 | | 5.31 | | 1326 | | 7.3 | As sold by the melters. |
| Feathers..... | 12.9 | 17.61 | 15.34 | 903 | 3835 | 11 | 2.1 | |
| Woolen rags..... | 11.3 | 20.26 | 17.98 | 1039 | 4495 | 9.2 | 2.1 | |
| Horn shavings..... | 9.0 | 15.78 | 14.36 | 809 | 3590 | 12.1 | 3 | |
| Coal soot..... | 15.6 | 1.59 | 1.35 | 81 | 337.5 | 122 | 30 | |
| Wood soot..... | 5.6 | 1.31 | 1.15 | 67 | 287.5 | 149 | 35 | |
| Picardy ashes..... | 9.2 | 0.71 | 0.65 | 36 | 162.5 | 275 | 62 | |

It will be seen that pea straw is worth, as a manure, from 5 to 9 times as much as the straws of the small grains—is better than clover roots, and actually equals farm-yard dung!

Rye, oats and barley send up a good growth of straw, in many parts of this zone, even where the product of grain is small; and, sown in the fall, they afford sweet green pasturage, during the entire winter, in the more southern latitudes. This is a very important and a very favorable consideration in an economical system of sheep husbandry. All winter green feed (roots) in the Northern States must be cultivated, harvested, protected from the frosts of winter in cellars, and daily fed out—which necessarily renders it expensive. Where winter field crops can be depastured on the ground, it saves the greatest proportion of this expense; and, though winter green feed is not indispensable to sheep, it promotes their health, early maturity, and is especially valuable to breeding-ewes. All the crops above named, too, can be profitably made use of as green manure.

Blades of corn, well cured, are relished by sheep, and they thrive on them.*

The sweet potato is also readily eaten by them, and it fattens them perhaps as rapidly as any other root crop. Although it might be regarded as too valuable for sheep feed, in regions where the whole force is given to the culture of cotton, there are others where, I cannot but believe, it might be occasionally if not regularly resorted to with profit, unless rye, oats, barley, &c. can be provided so much more cheaply that it is no object so to do. It is so cheaply planted by slips, and tilled with so little trouble, and it so admirably prepares land for subsequent crops,† that, on rich and otherwise favorable soils, my impression is strong it is, at all events, as cheap a winter feed for stock in the South as the Irish potato is in the North. Its average yield is about two-thirds that of the latter. The Irish potato is universally regarded as one of the cheapest feeds that can be given to all kinds of stock, to which it is adapted in the North. It is true that it is not fed so much as it would otherwise be, with us, in the winter, by reason of the *cold*. It is difficult to protect this root from freezing, and at the same time leave it accessible for daily feeding, without putting it in dwelling-house cellars, which are usually at some distance from the feeding barns and yards; and besides, the conversion of this citadel of a northern matron's culinary stores, into a great, dirty root pit, would be a most grievous infringement on all the canons of good housewifery!

The foregoing facts show that the Southern States have already all that is necessary to feed stock and fertilize their fields. Their pea, take it all in all, is a full equivalent for the clover of the North.‡ By means of it—of Bermuda and some other grasses—aided by the droppings of sheep, and other cheap and convenient manures, a large proportion of the tide-water zone, now so unproductive, can be converted into grazing lands, which will yield as good a per centage on present capital and investment as the best cotton uplands, and produce wool *at a less expense per pound than any region of the United States north of the Potomac.*||

FISH-PONDS.

THEIR CONDUCTION AND USEFULNESS.

THE utter indifference displayed by a vast majority of our farmers and planters to those means which tend to embellish and render attractive their homes, and add to the innocent enjoyment of their families, is inconceivable. How few are there supplied with an *abundance* of the finest fruit! And yet, what is the cost? A few hours in budding (as simple a process as any in Agriculture), and a little labor. They are all willing enough to rob a “bee tree,” and that at the cost of five times the labor it would require to make a few boxes to hive and domesticate the bees in. They have all heard of, and know, or ought to know, the sim-

* A friend of mine wintered a few Merino sheep on not only the blades, but the *stalks*, of our northern corn, chopping the whole up together, and adding a little bran or shorts. He found it cheap feed, and the sheep got fat enough to slaughter before spring.

† After the crop is harvested, swine are turned in, and they root the ground over so deeply and thoroughly that it is in a better state of tillage than could be produced by mere spring plowing.

‡ Mr. Ruffin, the great advocate for clover, admits that in the South it is not fitted to precede Indian corn, on account of the destructive *cut worms* it harbors, unless the land be plowed “early in winter,” or other precautionary steps are taken. The pea is not liable to this objection. See Ruffin's Ag. Survey of S. C., 1843, p. 78.

|| See Appendix, C.

ple process of caponizing fowls; yet they are contented to sit down to a scrawney, stringy, skinny chicken, instead of a fat, tender, luscious capon. He who dwells far inland may serve upon his table as fine fish as he who lives upon tide-water; but it would require some enterprise and a little trouble—so he sticks to his hog and hominy to-day, hominy and hog to-morrow, from year's end to year's end.

Of fish and fish-ponds it is our intention here to treat.

In Europe the fact is notorious that both the dove-cote and poultry-yard are far behind the fish-pond, both in the quality and quantity of their products, though far more expensive.

The first mention of fish-ponds in history is among the Romans; their invention is attributed to Murena. Those of Cato the ancient were immense, and the fish were regularly fed and fattened for consumption. We have an account of the ponds of Hortensius, of Lucullus and Cæsar, but they were on a scale that required to form them the wealth of the most powerful men in a nation that had seized the riches of the world. Lucullus severed a mountain that he might conduct an arm of the sea to his reservoirs; hence (as Pliny tells us) the great Pompey called him the Roman Xerxes.

A species of fish called the Lamprey was, it appears, held in the highest esteem for its delicacy. History has transmitted to us the name of Vedino Pollio, who had the hideous fantasy to feed his large lampreys on living slaves.

Fish were tamed and came at the call of their feeders. The orator Hortensius shed tears at the death of one of his lampreys, and his heiress Antonia decked a favorite fish of hers in gold rings, and it became an object of great curiosity in the neighborhood.

They had, too, their ponds for oysters, that were brought from immense distances. But enough of this that is merely curious, and let us turn to the practical.

The pond should, if possible, be near a spring, and thence derive its supply of water; those upon larger streams are liable to be swept away by freshets. The lot in which the pond is situated should be kept permanently in grass; otherwise the water at every rain is liable to become muddy, and the pond to fill up from the washing of the soil. To construct the dam, commence by sinking a ditch (until you reach the solid subsoil) four feet wide, and in the center of the place to be occupied by the dam; the earth thrown out to be laid on each side. This ditch is to be gradually filled with clay, a little at a time, and that to be kept moist and well pounded. This wall (as it were) of clay to be carried quite to the top of the dam, and will form what is called the key. The dam should always be three times as wide at the base as it is high, and its width at top should equal its height. The more gentle the slope from the top of the dam each way, the greater its strength. Trees and shrubs should never be planted upon it, as the decay of their roots is liable to let the water through. The stream running from the pond might in many locations be turned to good account, either as water-power for the minor domestic purposes, such as forcing water, churning, &c., or for irrigation.

In Europe their fish-ponds are usually stocked with the carp, tench and pike, but we have a fish that is worth them all, and that is the James River or North Carolina *chub*. We find it hard to say how we like him best—fighting gamely for his life (as he always does) at the end of a line, or smoking on the board with “sauce and fixins *a la Guy*.” Your old Baltimore friend, unexcelled if not unequaled in his profession. How could he be otherwise, growing up under the eye of your other old friend, KING DAVID?

Now that the land is webbed over with railroads, there can be but little difficulty in getting this noble fish anywhere. Doctor Thornton, of Rappahannock, Virginia, ranks it next to the salmon. He has succeeded perfectly in transporting them alive over eighty miles of bad road, at the speed of ordinary road-wagons. There is no fish that will thrive better; even in small ponds they sometimes attain 15 pounds in weight; and though last, not least, young Wade Hampton, (than whom there is no better authority) says it's a crack sporting fish! F. G. S.

LECTURES ON BOTANY

AS CONNECTED WITH AGRICULTURE.

Who can read the following without being again powerfully impressed with the necessity of such a reform in our systems of rural education as shall insure the youth of the country, who are to live by the labor and products of the country, being early instructed, not in a senseless repetition of speeches by Greek and Roman orators and generals, as—"My voice is still for war," &c.—but in branches of knowledge that will *open to them the beauties of their own pursuit*, and lead them to see that it cannot be followed with the highest profit or honor without a better insight into the sciences that serve to enlighten the practice of it.

Does any one undertake to manage and direct all the complicated operations of a large manufactory, without having served an apprenticeship to the business and learning its mysteries? And yet is it not obvious that Agriculture, too, is nothing but a manufacture? For the manufacturer's business is so to manage and combine and bring into coöperation his soil, seed, manure, labor, and various materials, as that out of them he may most economically supply himself with other products more desirable, as beef, butter, cheese, cotton, sugar, rice, corn, wheat, &c. What, then, but a great manufactory on a large scale, and requiring rare tact and high qualities in conducting it, is such an estate, for instance, as Hopeton, near Darien, Georgia, which employs not less than \$30,000 worth of machinery, in its various operations?

How gratifying to see Governor Aiken, and all other Governors in the country, calling the attention of Legislatures to provision for *school instruction* in the *sciences* applicable to Agriculture! The truth is, that there is no guaranty in anything but that for permanent, sure, wide-spread, respectable, and progressive improvement in this greatest, because most useful of all arts. But we have not time to indulge in the reflections that rush upon the mind, with deeper and deeper convictions of its importance, whenever we begin to write or think on this matter. Our present purpose was merely to submit the following to the mind of the reader, and to ask respectfully of every father whether he ought not to feel the same obligation to have his son instructed in these branches of useful as well as elegant knowledge, so directly allied to his calling that he would do to have his leg well set if fractured by a fall from a horse. A crooked leg is unseemly, to be sure, but the father of true sensibility will regard in his son a crooked or empty mind as a much more lamentable deformity. But, thank Heaven! the ball is in motion. See Doctor Thomson's letter, and a thousand other auspicious signs.

COURSE OF LECTURES ON BOTANY IN REFERENCE TO AGRICULTURE.

By CHARLES JOHNSON, Esq., Professor of Botany at Guy's Hospital, &c. &c. At Messrs. Nesbit's Agricultural and Scientific Training School, Kennington Lane, Lambeth, near London.

INTRODUCTORY LECTURE.

WE commence this day a series of Lectures on Botany, not as an abstract science, but as one intimately connected with various branches of human economy, and more especially with that which, as it ever has been, so it must

continue to be, of the utmost importance to mankind, viz., *the cultivation of the earth, the prime source of our civilization and of almost every art that ministers to the elevation and improvement of Society.* Itself an art of the highest antiquity, Agriculture must al-

ways have been one of progression; more or less simple in its practice at the first, observation and experience season after season suggesting new plans of operation, new means of improving or maintaining the fertility of the soil, and of guarding against those casualties that in every country and climate affect the productiveness of the crop. The success—sometimes, perhaps, rather fancied than real—of one experiment led to the institution of others, and thus the pursuits of the husbandman, originally followed without rule, and precarious in their results, were by degrees brought to a state of perfection and fixity of purpose that elevated the art to the science, the mere laborer to the philosopher. Such has been its progress in all ages among all nations. But to advance beyond a certain point, the cultivator of the earth must extend his sphere of information, must seek the aid of other sciences, possibly of those which, from imperfect acquaintance with their objects, he has hitherto regarded as completely isolated from his own. So mutually dependent are the laws and operations of Nature upon each other, such her unity of action, that to confine ourselves to any branch of knowledge abstractedly is folly, willful blindness: learn all you can, and you will not keep it seven years without turning it to some useful purpose. We are advancing in our estimation of these things daily; and you whom I now address will stride, I trust, not one, but many steps, beyond your fathers in the great work of improvement, whatever may be the duties of your after life. A high-class farmer of the past generation would have ridiculed the idea of his son and intended successor being taught at school the rudiments of chemistry and natural philosophy: they might, indeed, be very useful to a manufacturer, but quite superfluous in his case. As to Botany, he would regard it as downright nonsense. Not thirty years back, I knew a gentleman, residing in one of the best cultivated districts in England, who had the reputation among his poorer neighbors and dependents of dabbling in magic, and among those of his own grade, even the best informed, was looked upon with a sort of pity as a monomaniac—simply because, being a man of some scientific acquirements, he was laboring by rational means to enhance the value of his own property, and suggest improvements to those around him; had written a book on the natural history of his native county, employed his leisure from other pursuits in analyzing, in a small, well-furnished laboratory, the subsoil of his own and his neighbors' fields; occasionally cultivated patches of all sorts of weeds, exotic and British grasses, &c., with a view to the best means of exterminating the former and ascertaining the value of the latter, in a plot of ground set apart for the purpose; and, more wonderful than all, sought to discourage poaching by turning away his gamekeeper and neglecting his preserves. The preju-

dices against new methods of cultivation are now quickly subsiding, in proportion to the diffusion of general knowledge; the numerous Agricultural and Horticultural Societies that have successively started into existence in this country, the increasing numbers of their members, and interesting character of their meetings, all evince that a spirit of inquiry is extending its influence among our rural population, no less than among our manufacturers and merchants, the results of which it is at present difficult to speculate upon, but the general cry is, "Forward, forward." In Great Britain every movement of the kind has been hitherto due to the energy of private individuals and the ready response of an industrious and enterprising people; but on the Continent—in France, Prussia, and most of the German States—public schools, under the auspices of the Governments, and established by them, are open for the education of youth in this important department of human economy, furnished with professors in the auxiliary branches of science, as chemistry, botany, geology, &c., and with all the essentials requisite for combining theory with practice. The advantages already derived to the States in question from these establishments have been sufficient to prove the value of the extended system of education they have afforded; and old prejudices are universally disappearing as their pupils become distributed through the Provinces, carrying with them the most unbiased views and openness to conviction which are the natural results of a liberal course of instruction.

The value of Botany, as a practical science, is not so well appreciated in this country as it is abroad; and this simply because the attention of our practical men has not been hitherto sufficiently directed to it, nay, has even been averted in consequence of the very general prejudice that it is better fitted for a plaything than a tool; a notion—I will not call it an opinion—that originated very naturally, from the superficial manner in which its study was followed in this country by most of those who aspired to rank among its votaries, even so recently as twenty years ago. It was then little more than the art of distinguishing one plant from another, of allotting to each its learned name and place in an arbitrary system of arrangement, and, sometimes, of adding to these capabilities a remembrance of the qualities of those used as food or medicine. Now, to use the words of a modern writer, one of its most able and industrious professors, "it comprehends a knowledge not only of the names and uses of plants, but of their external and internal organization, and of their anatomy and physiological phenomena; it embraces a consideration of the plan upon which those multitudes of vegetable forms that clothe the earth have been created, of the skillful combinations out of which so many various organs have emanated, of the laws that regulate the dispersion and location of species, and of the influ-

ence that climate exercises upon their development; and, lastly, from botany, as now understood in its most extensive signification, is inseparable the knowledge of the various ways in which the laws of vegetable life are applicable to the augmentation of the luxuries and comforts, or to the diminution of the wants and miseries of mankind. It is by no means, as some suppose, a science for the idle philosopher in his closet; neither is it merely an amusing accomplishment, as others appear to think; on the contrary, its field is in the midst of meadows, and gardens, and forests, on the sides of mountains, and in the depths of mines; wherever vegetation still flourishes, or wherever it attests, by its remains, the existence of a former world. It is the science that converts the useless or the noxious weed into the nutritious vegetable; which changes a barren, volcanic rock like Ascension, into a green and fertile island; and which enables the man of science, by the power it gives him of judging how far the productions of one climate are susceptible of cultivation in another, to guide the colonist in his enterprises, and to save him from those errors and losses into which all such persons unacquainted with botany are liable to fall. This science, finally, is that which teaches the physician how to discover in every region the medicines that are best adapted for the maladies that prevail in it; and which, by furnishing him with a certain clue to the knowledge of the tribes in which particular properties are or are not to be found, renders him as much at ease, alone and seemingly without resources, in a land of unknown herbs, as if he were in the midst of a magazine of drugs in some civilized country."

This department of science, which is now becoming a subject of general interest, in consequence of the new views of the economy of Nature in her development of organic being, that have been obtained by a deeper insight into vegetable anatomy and physiology, cannot but be more especially valuable to those whose pursuits are so intimately connected with the objects of its study, the cultivators of the soil. There may be, doubtless there are still, many such as those of which we have previously spoken as existing thirty years ago, who in the pride of their ignorance, may laugh at and despise the lessons of the theorist as opposed to old practices, the result of the experience that has been handed down from their forefathers; until wakened to slow conviction of their importance by the success of their more enterprising neighbors, and then deplore the time they have lost, and which others have occupied in the steady progress to improvement. The views of the merely scientific man may often, it is true, be only speculative; they may sometimes be in direct opposition to facts, of which he has himself no direct means of becoming acquainted. But who is to test the value of his experiments, unless the man of practice? He alone, in his broader field of inquiry, is

competent to detect in their action the errors in minute that have escaped the notice of the chemist in his laboratory, and the naturalist in his closet; he chiefly is to derive the benefits accruing from their united labors; and a knowledge of the leading principles of their science and of natural philosophy in the aggregate will materially assist, nay, is absolutely necessary to qualify him for both the trial and the benefit. It is surprising that the very evident advantages to cultivation that an acquaintance with the structure and vital function of vegetables promises, should have hitherto been so little estimated by the agriculturist: the practical gardener has far anticipated him in the pursuit of inquiries equally essential to them both; although, perhaps, himself in the main, still very distant from acquaintance with a vast body of facts that might be rendered available by his skill. How much, for instance, has a knowledge of the organs and attributes of the flower contributed to the advancement of his art? Let us look at a flower: it is really a complicated object; much more so than many who have long admired and cherished it for its beauty and fragrance have any idea of; or, if they have, have not thought worthy of examination. Its greatest beauty consists not in the gorgeous color, nor its value in the most exquisite odor, but in the admirable adaptation of its parts, and their subservience to the reproduction of its kind.

Take any common flower of the field or garden, only observing that, if one of the latter locality, it is not of the kind called "double," which, however admirable as garden ornaments—and not altogether to be despised by the botanist, on account of the illustrations they afford him of the morbid development of parts to which the individuals of the vegetable kingdom are liable under peculiar circumstances—are not at all calculated to display the unity of design that constitutes the chief object of interest in a perfect flower. Externally, investing the base of the flower, is a series of small leaves, usually of a green color, and from three to five in number, separate, and spreading, as in the buttercup and the peony, or conducted into the form of a cup or vase, as in the primrose or pink: this is the *calyx*, or flower-cup; it covers the rest of the flower in the state of bud, and serves to support and hold together the more delicate internal organs when expanded. Within the calyx is the *corolla* or blossom, composed of leaves, generally of the same number as those of the calyx, which are either white or variously colored, and called *petals*; these are either distinct, as in the rose and the wall-flower, or connected, as in the fox-glove and potato-flower. Within the corolla are the *stamens*, generally thread or wire-like processes, with yellow, or, occasionally, purplish or reddish tips; these are very variable in their size, length and number, in the flowers of different plants; some flowers have only one or two stamens—in the

bell-flower there are five, in the tulip six—and in some others they are too numerous to be counted. The stamens surround the *pistil*—so called from the Latin word *pistillum*, a little pillar or column, or, by a more homely interpretation, a *pestle*: look at the pistil in the flower of the lily; at the lower extremity, where attached to the flower, is a thickish, green body, called the *germen*, or *ovary*, from containing the rudiments of the seeds; the long, wire-like part in which this terminates is called the *style*, and the knob at the

extremity of the style is named the *stigma*. Look at the pistil of the tulip; in that the germen is long and three-sided, bearing the curiously three-parted stigma on its summit, and the style is wanting. The pistil is not always solitary; in many flowers there are two, three, or more together; and they are frequently very numerous, as in the common buttercup, where the many little green, pointed grains in the center of the flower are so many pistils. See fig. 1: *a* the calyx; *b* the corolla; *c* the stamens; *d* the pistils.

Fig. 1.

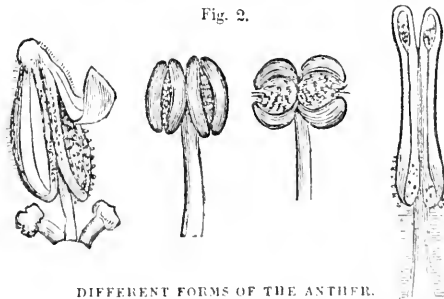


STRUCTURE OF FLOWERS.

In most of the higher orders of plants, all of these parts are present in the perfect flower; and sometimes other appendages, of which we may speak hereafter; but in some there is no corolla, in others neither corolla nor ca-

lyx, and in many the stamens and pistils occupy distinct flowers—all very important characters in distinguishing one family of plants from another, and especially deserving of the attention of the cultivator.

Fig. 2.



DIFFERENT FORMS OF THE ANTHER.

Of all the parts or organs of the flower, the stamens and pistils are the most essential. The stamen is a very curious body; the lower part, called the *filament*, from its resemblance

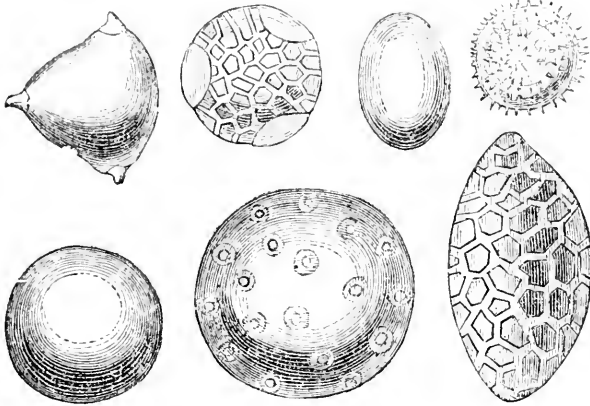
when very slender to a thread of hair, is frequently absent, the colored tip being attached to the corolla or some other part of the flower; this tip, denominated the *anther*, is a little

case or box, usually double, opening at a certain period on each side, and scattering an exceedingly fine powder, called the *pollen*. The forms of the anther are various, and likewise the modes of opening. (See figure 2.) Thus sometimes, and indeed most frequently, the opening is by a longitudinal slit the whole length of the anther; in many in-

stances it is a small pore or perforation at the extremity, and in others it takes place by a little door or valve turning upward, as shown in our figures.

The grains of pollen are very beautiful objects for the microscope, under which they present a great diversity in size, form, and structure. (See fig. 3.)

Fig. 3.

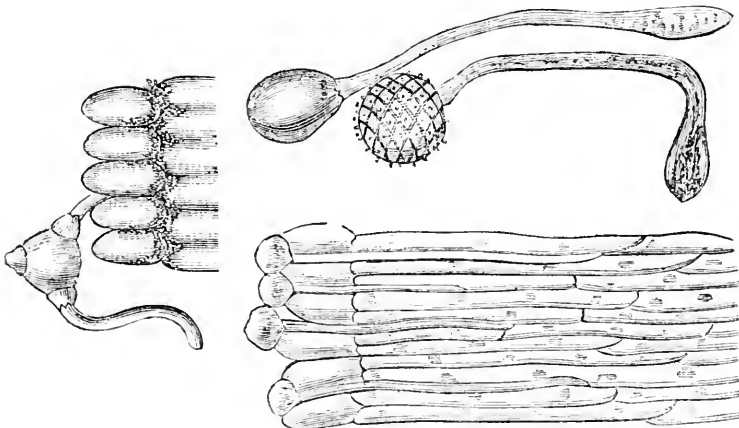


GRAINS OF POLLEN MAGNIFIED.

The pollen is an agent of vast importance in the economy of the vegetable kingdom; the maturity of fruit and the production of seed being dependent upon the contact of these minute bodies with the stigma or summit of the pistil. About the period at which the anthers burst and scatter the pollen, the surface of the stigma is seen to be moistened by a viscid secretion, that, occasioning the ad-

herence of such grains as light upon it at the moment of dispersion, so acts likewise upon them as to stimulate the ejection of one or more slender tubes from the surface of each individually; which tubes extending more or less according to the length of the pistil, penetrate through its tissue until they reach the interior of the germen and come in contact with the embryo seeds. In the event

Fig. 4.



POLLEN TUBES.

of this contact not taking place, the seed becomes abortive; and hence in many seed-cases, as those in the common pea, we find

only two or three perfect seeds, instead of nine or ten, perhaps, whose rudiments were present. The grains of pollen, examined by

a very high magnifying power, are found to consist of a membrane, inclosing a fluid, in which an infinite number of excessively minute particles are seen in active motion; these contents are eventually discharged through the tube, the grain being left empty. The figures in the 4th wood-cut are intended to illustrate this action of the pollen tubes; of the two larger ones, that with the triangular pollen represents it as taking place on the stigma of the common evening primrose; the other, the descent of the tubes through the stigma and parts of the style of the great snapdragon or calve's snout. This curious process was unknown to naturalists until recently, though the influence of the pollen in the fertilization of the seed seems to have been understood in relation to certain plants from a period of great antiquity, especially some of those in which the stamens and pistils are produced in different flowers, and occasionally on different individuals, whose male and female attributes must have been recognized by the cultivator before success could have attended his labors. As a striking instance, we may refer to the date, the staple food of the nations of the Arab stock from time immemorial. The date tree is a kind of palm growing abundantly in the sandy and rocky districts of Persia, the adjoining Provinces of Western Asia, Arabia, Egypt, and Northern Africa, and is largely and assiduously cultivated by the inhabitants. A forest of dates is a magazine of provision for a city, and the failure of a crop spreads depopulation through whole provinces; the quantity of fruit yielded by a single tree in each season is, on the average, from two to three hundred weight; every village has its plantation, and even the splendid city of Zenobia derived its Roman name of "Palmmyra," and its Arabic and scriptural appellation of "Tamor" or "Tadmor" in the desert, from the groves of dates by which it was from necessity surrounded. These plantations are, of course, chiefly of the trees with pistil or fruit-bearing flowers; but in order to insure a crop, the natives are accustomed to gather the large bunches of flowers from the male dates, about the time at which the stamens are ready to scatter their pollen, and suspend them over the others; nay, to guard against an adverse season, they lay by stores of pollen from year to year. This "marriage of the palms," as it is called in the figurative language of the East, is a festival of too early origin to be recorded even by tradition. So well is the necessity of the process understood even by the wildest of the wandering and predatory tribes, that in carrying war into the lands of their neighbors, they frequently cut down the stem-bearing dates as the most dreadful vengeance they can inflict. Some idea of the importance of the act may be gathered from the statement of Kämpfer, that the threat only of so doing once put a stop to an intended invasion of a then very formidable power: he mentions, "I remember it hap-

pened in my time that the Grand Signior meditated an invasion of the city and territory of Bassora, which the prince of that country prevented by giving out that he would destroy all the male palm trees on the first approach of the enemy, and by that means cut off from them all supplies of food during the siege."

This principle in cultivation, so long understood and made available in that of the date, was afterward found to be applicable in the nurture of all kinds of flowering plants. Of the experiments by which it became established beyond the reach of controversy, or of the means by which our present knowledge of the important fact has been acquired, it is unnecessary for us now to inquire; however interesting the detail, we must waive it for the consideration of the result, viz., the vast power that knowledge has placed in the hands of civilized man, to multiply and enlarge these sources of food and luxury which he derives from the vegetable kingdom, and to which the plasticity of nature seems scarcely to have assigned a limit. The almost endless varieties exhibited among our cultivated plants, whether in root, or leaf, or flower, or fruit, or seed, have all their origin in the reciprocal action of the stamen and pistil: Nature herself has contributed many, but man has far outstridden her slow progress. The bee in passing from flower to flower, carries away stores of pollen destined to form the waxen fabric of his dwelling, and deposits stray particles adhering to his wings and body upon the pistils of others of a different kind; while numerous small flies and beetles are occupied, in their search for food, in impregnating in a similar manner the seeds of one plant with the pollen belonging to another. Hence the uncertainty attending the preservation of cherished varieties of annual plants in cultivation. When the gourd known by the name of "vegetable marrow," was first introduced into this country, I received some seeds of a very fine variety brought from the Continent, and celebrated there for the large size and luscious character of the white fruit; for several years no deterioration was observable; but having sown one season some of the seeds belonging to one large "marrow" fruit reserved for the purpose, my surprise was great to find, when the plants came into bearing, no fewer than three different varieties of gourds were the produce of different individuals, all of them totally unlike the original. This apparent anomaly was afterward explained away by the fact that, while my vegetable marrow was flourishing on one side of a high wall, my neighbor had trained a pumpkin and an orange gourd on the opposite; and the reserved fruit must have had its seeds fertilized by the pollen of both of them, and of some other species or variety brought by the bees or other insects from a greater distance. These freaks—if we may so term them—of Nature are not only productive of occasional loss and disappointment to the cultivator, but even of much greater evil, as

evinced by a circumstance recorded by Ray to have taken place a short time previous to the promulgation of the discoveries of Sir Thomas Millington respecting the functions of the flower. It appears that a market-gardener of Brentford, named Richard Baal, sold a quantity of the seed of the cauliflowers at that period bearing a very high price, to a number of persons carrying on the same trade in the vicinity of the metropolis, who, having sown it in the usual way, were surprised and alarmed on finding that, instead of cauliflowers, it produced a kind or variety of cabbage then in common use, and known as the long-leaved, probably resembling some of the coleworts or kales of the present day. Enraged at their loss, and attributing it to dishonesty on the part of Baal, they joined in a prosecution against him. The trial took place in Westminster Hall, where he was adjudged to be guilty of fraud, and sentenced not only to pay back the price of the seed, but to compensate the gardeners for their loss in cultivation, and the diminished value of their expected crop. Thus was poor Baal ruined both in fortune and character by the ignorance of his judges, who, had they been acquainted with the true state of the case, would in all probability have acquitted him of all fraudulent intention, attributing the mishap to the accidental impregnation of the pistils of the cauliflower by the pollen of the colewort, through the medium of insects, or wafted by the wind.

To attempt a detail of the advances made in Horticulture and Agriculture, particularly in the former, since the time of Baal, solely in consequence of our knowledge of a fact that, unknown, caused his ruin, would be an all but interminable task. The natural varieties of esculent and ornamental plants were then comparatively few: those artificially obtained since are now approaching to a number the extent of which it is impossible to foresee or calculate; their name is already "Legion." The most astonishing examples are to be found in the annals of the florists, the cultivator of geraniums, roses, heaths, and pansies. The art which has successively produced their hundreds and their thousands, differing only in the form or arrangement of a petal or the disposal of its tints, a spot or line may perhaps be regarded with contempt by those whose pursuits are directed to an end more immediately and obviously useful; but, without seeking to oppose their prejudices by tracing the necessary association between the elegant and the useful in elevating man in the scale of being, let me remind such persons that the plastic power of Nature is equally efficient in enlarging a root and seed as it is in varying the colors of a flower, and that the same means differently directed will effect both. How else the vast diversity of our home-grown fruits, almost equaling in many kinds, and in some surpassing those of our garden-flowers? The varieties of the apple alone—the most valua-

ble of them all—amount to about two thousand; yet all of them are derived from two original species, viz., the *malus acerba*, the harsh and sour crab-tree of our forests, and the *malus mitis*, or sweet apple of a milder climate; both of which are by some botanists considered to be natural varieties of the same, though their origin cannot now be traced. These two thousand varieties, about one thousand kinds of pear, and half of the latter number of cherries and plums individually, have all originated from seed, and are indebted for their peculiarities in flavor, hue, and form or size, to the pollen with which that seed was fecundated. That which has been effected with regard to fruit and flowers is equally possible with roots and grain, as well as other vegetable products requiring cultivation on a large scale. If by crossing the breed in cattle the agility and muscular forces of the horse have been improved, adapting him to the various purposes for which his powers are required, the flesh of the ox and sheep rendered more palatable and nutritious, and the wool of the latter increased in fineness and quantity, the attributes of the plant may be called forth and rendered more subservient to the wealth of the agriculturist by similar means. The plant and the animal are both organic structures, subject to the same general laws of development and reproduction, of improvement and deterioration; and in permitting the manifestation of those laws, though only to the slight extent of our present knowledge, Nature has bestowed on man a power of forestalling, for his own immediate purposes, changes that, under her own dominion, would perhaps never take place, or but after the lapse of thousands of years.

We might pursue this subject much farther, but it would carry us beyond the ordinary limits of a lecture; and as my purpose in this, the introductory one of a course of some extent, is rather to call your attention to the science of Botany as one of practical utility, than as a mere source of amusement, if that purpose has been attained it will be sufficient for the present. In our next, some detail of the functions and organs by which vegetable life is maintained will be necessary to the understanding of those that will follow. The cultivator of plants who knows nothing of their anatomy and physiology is much in the same position as the quack who undertakes to lop off a man's limb without knowing the veins and arteries he must sever in the operation, or who prescribes a course of diet or medicine, ignorant alike of the nature of either, and of the vital energies through which he expects them to prevail.


[London Farmer's Magazine

TO DESTROY THISTLES.—Mow the plants close by the ground, split open the root stalks, and put salt in the opening.

MADDER.

IN the last number we evinced our desire to have the latest and most authentic information on the Culture of Madder as a crop adapted to the United States.

But what is needed in this, as in all similar cases, is the most recent actual experience. A frank, full, honest statement of expenditure, both of labor and money, as well as of the income. If half were true that has been published in favor of the cultivation of madder, one would suppose it should have spread before now, like the cultivation of tobacco, until, like that, as well as some other things, it should have broken down by its own expansion.

We have no difficulty in learning enough about the commercial and agricultural history and uses of madder in other countries, and even in our own, going back to its culture in South Carolina before the Revolution. It may, indeed, be instanced here as a proof of the abundant materials at our command, for illustrating topics on which our patrons desire to have information, to state, that in this case we have within arm's reach twenty different works in which the subject of madder is treated in some of its relations to Agriculture and the industrial arts, and more than double that number of essays and communications in reference to it in the various annals of industry. But, in turning from one branch of his business to another, so different from his usual routine, the American Farmer wishes to know, if to be had, the actual results of experiments made by one of his own countrymen, working under circumstances analogous to his own, and if these results give reasonable assurance of profit, then, as with our correspondents from Arkansas and Virginia, they naturally inquire, Where can we get the materials—the seed or the roots—and the price?  The price is always wanted. On this point we are promised farther information by Mr. Allen, in a day or two. He says several attempts here to raise madder from the seed have failed, and recommends writing to friend BATEMAN, of the Ohio Cultivator, Columbus, who will please consider himself, on seeing this, as having been served with notice.

The quantity of madder imported and entered for consumption, in Great Britain, in 1832, was as follows, the first, we suppose, meaning *ground* madder:

| | | | |
|------------------|-------------|-----------|-----------------|
| Madder..... | 60,340 cwt. | —equal to | 6,758,752 lbs. |
| Madder root..... | 51,769 " | " | 5,797,904 " |
| Being..... | | | 12,556,656 lbs. |

Supposing one-third of that amount to be used in the United States, we should have 4,000,000 pounds, which at 15 cents, about the average price, would be \$600,000, now sent out of the country for an article to which our soil and climate are as well adapted as to the sweet if not the Irish potato.

But we are left to conjecture as to the amount imported: for, while many other articles of less importance are given in the Secretary's Report—such as *wood*, or pastel, barilla, vinegar, statuary, burr stones, nuts, berries, crude antimony, &c. &c.—*madder* is smothered up in the mass of *non-enumerated* articles. But being an item in which *agriculturists* are deeply concerned, who takes the trouble to care about the legislation relating to it? Yet surely this greatest interest of the nation labors under disadvantages and burdens enough, without

expressly putting out or withholding the lights that might serve to disclose, and perchance to remedy some of them !

Where was the vigilant representative of the agricultural interest ? Where the vigilant Committee on Agriculture, to look after this item in the adjustment of the Tariff, with such effect as that we find the present " Free Trade " Tariff protecting it with a duty of *five per cent.* on the imported article, and the late more protective Tariff of 1842 encouraging the American production by letting in the product of the Dutch cultivator *entirely free* ! Think you that the manufacturer was not there, looking closely after *his interest* ?

After all, however, what we imagine is most to be apprehended is the amount of labor demanded for its cultivation when conducted in a manner to bear any comparison with what we see is applied to it in Holland and elsewhere in Europe. Still, with Government encouragement, comparable with that which is extended to some other branches of industry, it would take root and become an established item of our agricultural staples, and so far relieve other branches, where production is so much beyond all remunerating demand. In many new enterprises of this sort, half the difficulty consists in the timidity and irresolution of those who contemplate them. Especially is this the case with men whose habits of life are anything but encouraging to intellectual versatility and enterprise. Another bar to the general culture of madder is the long time—several years—that elapses between the seed time and the harvest—demanding the exercise of a quality of all others the most incompatible with the genius of the American people.

We proceed to give one out of the many communications before us, because it seems to be among the most recent and nearest home. The result of still more recent ones shall be sought for, and given as they come to hand.

From the Albany Cultivator.

THE MADDER CROP.

HON. J. BUEL—*Sir*: As I consider the madder crop to be one of importance, as well to the grower of the article as to the country at large, I deem it proper to send you a few lines, giving some details of the most improved method of cultivating and preparing the article for use ; which, if you deem them worthy a place in the Cultivator, you are at liberty to insert.

The land best adapted to this crop is a retentive, strong loam soil, moist, but so situated that the water may pass off in the wet seasons of the year. The plant accommodates itself to almost any soil ; for I last fall harvested a piece that yielded at the rate of five thousand pounds to the acre, (in hills,) which was in a dry, loamy soil, suitable for the wheat or corn crop.

The method of planting has been formerly in hills, from four to six feet apart. The hills yielded from two to three pounds of ground madder each, on good land.

Madder growers have lately made great improvements in the mode of planting. The drill method was introduced two or three years since, and is now the only way practiced by those who raise madder in any considerable quantities. The first drills that were planted were set in single rows, about

six feet apart and eighteen inches from plant to plant. These were found to be **too** near together, both for the good of the crop and the convenience of tending it. It is now ascertained that the best method of planting madder is in beds six feet wide, with four rows of plants to a bed, leaving a space between the beds nine feet wide unoccupied ; or it may be planted with rows of corn or potatoes the first season. This space is useful for various purposes, as passing with a team to carry manure, should it be considered necessary during the first and second seasons. The manure should be cropped between the beds, and mixed with a plow before it is used in beds.

Particular care should be taken at the time of planting, that the ground be not too dry. It should be covered with clear, moist dirt, about two or two and a half inches deep. Soon as it has come up, it should be carefully hoed and cleared from weeds. When it is six or eight inches high, the tops should be covered up nearly to the ends, and covered again as soon as they are six or eight inches high as before. In the fall, before the frost kills the tops, they should be covered entirely up. It is then left to lie till the next spring. It should be managed in the same manner

during the second as the first season; but requires only two dressings before covering up in the fall. During the third season it should be dressed once certainly, and twice if practicable; and by this time the tops may be expected to cover the ground nearly from one bed to the other. During the fourth season, it requires no attention till the time for digging, which may be any time in the months of September or October. At digging time, the tops should be cut off with a scythe, and rolled out of the way; then, with a plow, cut a deep furrow on each side of the bed; afterward take dungforks and shake the dirt from the roots. They may then be picked up. Proceed in this manner till the whole bed is dug, washed clean, and dried in a hop-kiln. A stove is preferable to charcoal for drying. Fifty bushels of roots may be dried in a kiln 12 feet square. They should be turned while in the kiln, at least once in six hours, until they are thoroughly dried, which takes from 36 to 40 hours. When taken out of the kiln, they should be taken immediately to the mill for grinding. Mad-dler has formerly been ground in grist-mills, but a much more convenient and economical way, is to grind in cast-iron mills, constructed expressly for grinding madder. They also answer a valuable purpose, for grinding coarse grain for provender, in sections of country where grist mills are not near by. They may be propelled by horse power, (one horse being sufficient,) or by water power if it is convenient. One of these mills will grind 800 or 1,000 pounds a day with one horse.

Improved mills of this kind can be obtained by applying to me at West-Winfield, Herkimer county, or Lester Curtis, Nelson, Madison county. Orders for mills will be promptly attended to; price \$29.

The following bill exhibits nearly the cost of cultivating an acre of madder, including the expense of digging, drying and grinding:

| | |
|--|------------|
| Seed per acre..... | \$32 00 |
| Interest of land 4 years, at \$40..... | 11 20 |
| Plowing and harrowing twice..... | 2 50 |
| Planting..... | 2 00 |
| Dressing first year..... | 8 00 |
| Do. second year..... | 7 00 |
| Do. third year..... | 3 00 |
| Digging..... | 21 00 |
| Drying, 25c. per cwt..... | 12 50 |
| Grinding, 25c. per cwt..... | 12 50 |
| Total cost..... | \$111 70 |
| Product, if well cultivated, 5,000 lbs. at
20 cents per lb..... | \$1,000 00 |
| Deduct cost..... | 111 70 |
| Net profit..... | \$888 30 |

A good crop of madder looks small the first season, but those interested need not be discouraged. I have now planted nine acres, and shall be ready at the season for digging to supply seed to a considerable amount. Those who wish for seed had better obtain it in the fall. Quantity per acre, as 1 plant, 8 bushels.

Price of seed: under 6 bushels, \$4 per bushel; over 6 and under 12 bushels, \$3 50; over 12 bushels, \$3.

HERBERT WOODBERRY.

West-Winfield, N. Y., July 20, 1835.

In our next we will give a supplementary communication from Mr. Woodberry.

A GREAT OPERATION PROPOSED.

Extract from a Letter to the Editor of 'The Farmers' Library.'

* * * "The domain I told you of is in Pickens District, South Carolina, and contains more than 100,000 acres—beginning, say two miles above the mouth of Chatuga River; running up that stream to about the dividing ridge between Village Creek and Tomassee Creek; across, along it several miles, and thence sloping wider to embrace the country of the Chauga, and extending toward the source of Long Nose Creek; then making a detour to complete the circumscription at the Chatuga. I took the State Geologist all over it. He thought it one of the most beautiful and interesting portions of the State. The forest is particularly fine—the "range" superb. No loss from rocks; almost every acre cultivable; the soil good, resulting from decomposed hornblende, granitic slates, &c. As the hills are in ranges, the roads are surprisingly good. Iron ore, of several sorts, abundant. Lime, gold, &c. are known to exist. Water-power pervading and immense. The navigable waters of Tugola River are only three miles distant from its western limit, and the Greenville Railroad will come within some twenty miles of its eastern. The cheapest, easiest, healthiest and most natural route for connecting with the West, either by canal or railroad, is up the Tugola, through the Rabun gap, and down the L. Tennessee. [See the map.]"

The owner's motive for selling is with him a very natural one. Having very large possessions besides, enough to employ all his time, he would find it more

convenient to convert this property into some other form that should place the proceeds more immediately under his own supervision and management.

The Editor of THE FARMERS' LIBRARY has authority to form a Company for the purchase of the above property, belonging to a gentleman than whom the Union does not contain one of purer or more exalted character in "all that can give assurance of a man" of intelligence and probity. It is probable that the property may be had on *long time*; and that it affords a rare scope for the establishment of foundries and factories, and for a walk that would maintain 20,000 sheep. We publish the extract to open the eyes of the public to the opportunities that offer for investment near at home, in old, civilized regions, blessed with health and social advantages, instead of wandering away to distant and sickly frontiers, there to be overrun or swept along by and with the restless and eager crowds pressing onward to the shores of the Pacific. The better way would be to form a company here, and make a payment in the way of forfeit, securing time to go to Europe and engage settlers.

STATE AGRICULTURAL SOCIETY OF SOUTH CAROLINA.

At a late meeting of this Society, proceedings were had which indicate that those who carry it on are looking to something beyond and *above* the mere ephemeral influence of exhibitions of rare things, such as large mules and sleek horses. They are for setting and keeping the *mind at work*, to look into the sources of public evils and of public prosperity, and to expose and lay them bare in such manner as that men of patriotic impulses may the better and more certainly accomplish the noble purposes for which such men are born to society. After calling Gen. Allston to the chair, Mr. Seabrook offered the following resolutions, which he advocated at considerable length:

Resolved, That Committees be appointed for the following purposes, viz:

1. A Committee to report on the defects of the present Free School system, and the changes necessary to insure the accomplishment of the end for which it was established.

2. A Committee to report a plan by which the agricultural capabilities of South Carolina might be accurately ascertained, accompanied by suggestions for their early development and improvement.

3. A Committee to prepare a digest of the

views affecting the slave population of the State, and to report such as, in their judgment, ought to be repealed or amended, and whether farther legislation on the subject is required by policy or the public interests.

4. A Committee to report on the expediency of lowering the legal rate of interest.

5. A Committee to report on the expediency of changing the present mode of working the public roads.

6. A Committee to ask of the Legislature the immediate abolition of the lottery license.

We shall wait with hope and anxiety for the reports which may be expected under these resolutions. We trust the Committees will inquire particularly into the effect of the *rate of interest* on the interests of Agriculture, and whether any plan may be devised that will place within the reach of prudent cultivators the means of profitable improvement of their estates. That the whole face of the country might be so improved, if capital could be placed in combination with prudence, and with a reasonable degree of skill, such as distinguishes those who, with *better preparation*, follow other pursuits, we have but little doubt.—The whole question, however, is one of the gravest character, to be entered upon with care and circumspection to elucidate it. One thing is very certain, that there exists some strong attraction drawing capital and intellectual energy *from the country to the towns*, which it becomes those who pretend to represent the country to look into. And here we venture to propose this as a fitting subject

for inquiry by the *Agricultural Committees, so called, appointed in the several State Legislatures.*

There is, beyond its limits, and especially south of it, a decided impression that Agriculture is in a very flourishing condition in Western New-York. Our own view of it, along the great lines of travel, would not justify that impression. The country there generally wears a half-worn-out and about-to-be-deserted aspect. Fences are generally indifferent; houses look old and ragged, few of them newly painted; very few new gardens, and orchards, and plantations of ornamental trees about the farm-houses. On remarking upon these appearances to a plain, shrewd, sensible farmer near Saratoga Springs, last summer, and asking his explanation, and desiring to know what became of the net income, more or less, which is said to remain with most of them at the end of the year, and why it was not applied to improving the appearance and productive powers of their estates, so as to give to the eye of the traveler that delightful picture which is presented by countries in a course of general melioration, he answered promptly that the reason was to be found in the laws of the State *regulating interest*. As long, he said, as a farmer could, without the labor of cultivation, send his surplus money, much or little, *to the city of New-York, to be invested in "bond and mortgage" at 7 per cent.* he would neither appropriate it to the purchase of more land or to the improvement and brushing up of what he had; or, at least, it would be rarely done. It would be a curious result, by-the-by, if one could ascertain *what proportion of the State and City of New-York is under "bond and mortgage"!*

We would like to have an essay on this subject, such as we anticipate from the South Carolina Committee, and such as Mr. CAREY, of Philadelphia, or Mr. C. F. MAYER, of Baltimore, might supply. All we can do is to offer the 2 vols of *THE FARMERS' LIBRARY*—not for their value to such writers, but as a token of the importance we attach to the subject, and in the hope of being favored by those who have turned their minds that way, and with whom pecuniary compensation would be no object; and, if it were, we are not able to offer it.

There are millions of acres of land in Maryland and Virginia that, were they in England, would bring an annual rent far exceeding their fee simple value in this country. How is this? Certainly not from difference in the value of agricultural products or the cost of agricultural labor in the two countries, considerable or great as that is. Is it because we have *all land and nothing else*? Neither is it, we apprehend, that the capital, if it existed, to be applied with tolerable judgment to Agriculture, would not well remunerate the investment. What is it? The question is of much more importance for Agricultural Societies and Committees than how to make the fattest hog in the shortest time.

WILLIAMSON POTATOES,

FROM THE PLAINS OF BOGOTA.

MR. SKINNER:

NEW-YORK, Jan. 12, 1847.

Sir: You will please to accept, for yourself and friends, the inclosed lot of potatoes. They came from the plains of Bogota, in the Republic of New-Grenada. I sent for them for the purpose of getting new seed. I have sent for a few bushels more; and any of your friends who are in want can be supplied gratuitously by leaving their names with you. Also, a few dozen of the Yuca plant. There is no particular name for the Potatoes.

Yours,

J. D. WILLIAMSON, 476 Broome-st.

Reply to the above.

Dear Sir: The potatoes alluded to have been received and distributed to persons who will be careful in the cultivation, and report the result. Looking back

to the volumes of the American Farmer, which I founded and edited nearly thirty years ago, you will find that in the numberless cases of fruits, plants, animals and fowls received from abroad, and especially from officers of the Navy, I always insisted, where they bore no particular name, on the policy of calling them after those whose public spirit had led them to procure and import them for the benefit of our country: and the public should honor more highly, if it knew its own interest, actions like these, and the fame they deserve, than ————. The public taste, however, is far otherwise, and powerless would be the effort of an individual to change it.

I have accordingly given to these the name of the Williamson Potato; and have registered your note, on the principle that all such things should be preserved, as the means of tracing the history of fruits, trees, vegetables, animals, &c. to which they may refer, and which in time to come may be the subject of curious and interesting inquiry, as has been the introduction of coffee, tobacco, &c. in Europe. The YUCA will, when it arrives, be thankfully received, and distributed in the South. Should it succeed there, it may be coaxed along to the North in process of time, though it may be against the general tide of migration,

Respectfully, your obt servant,

J. S. SKINNER.

INDIAN CORN AND ITS VARIETIES.

THE most remarkable specimens that we have ever seen accompanied the letter from which the following extract is made.

There are few things in nature more remarkable than the *invariableness of an even number* of rows on corn. The procreation of male and female by the *pigeon* is said to be not without exceptions. Is it so? We have seen ears of corn which commenced with a certain number, always even, at the end attached to the stalk—say 12 rows—and which, for some reason, perhaps dry season or failure of manure, it could not complete, and accordingly *changed the number*, and run into a smaller one, say 10, but always dropping so as to maintain an even number. We recollect to have seen an ear at the Newcastle (Del.) Exhibition, where this change took place twice in the growth of one ear, so that it *ended* with four rows less than it began; but, what is remarkable, it never drops one, or three, or any other odd number of rows.

We had once, many years ago, nigh got into a scrape by saying that we had seen an ear of corn with 40 perfect rows. It was the yellow gourd seed, (and in fact, we have seen them not unfrequently) on a farm where ears of the largest number of rows had been selected for seed for a succession of years.

The fact is that grains and vegetables may be bred to run into excess, as well as animals, in particular points and qualities; but climate, after all, will not be forced to adopt what any willful experimenter may choose to transplant from one region to another. The large corn of the South can't be forced upon the North, nor *vice versa*.

We question if any man in the Union has experimented with this noble grain, in as many varieties of kinds and ways, and with as much intelligence, perseverance and success as the writer of the following.

We had written thus far before we saw again that the writer had forbidden the use of his name. We received the letter while Assistant P. M. General at Washington, and then distributed the corn. Since then, far from having ground

to cultivate, feel but too glad to have enough to stand upon, and health and heart to work for corn enough to eat.

LONG CREEK, Louisa Co., Virginia, May 25, 1844.

Sir: I think it probable the gourd seed corn which I cultivate (marked No. 1) is similar to that mentioned in your note to the Editor of the Southern Planter, published in February last.

I cultivate several kinds of corn which I consider very valuable; indeed, I have never seen any which I consider equal to them. Samples of five kinds accompany this note; they are the result of 30 years' crossing and experimenting with many varieties of corn.

In the year 1839, I raised corn so large that nearly a quart was shelled from a single ear. I found one ear with 44 rows upon it, and upward of 50 grains in each row. Each package sent herewith is marked with the number of rows, and of grains upon the ear, shelled, and put into it. I prefer No. 3, though No. 2 is excellent, and No. 1 will produce more bushels but not many more pounds than Nos. 2 or 3. I measured an ear of No. 4, which grew upon thin land, that was twelve inches long. It is heavy, sound corn, fine for bread. No. 5 will grow well upon very poor land. I do not recollect that I ever gathered a decayed ear of it. I raise it to feed horses and hogs. It is heavy, nutritious, and very productive. Nos. 2, 3, 4 and 5 will weigh from 57 to 60 lbs. per bushel of 2,173 cubic inches.

If, upon examination, you incline to cultivate any one of the kinds accompanying this note, I will send it to Baltimore by a steamboat from Richmond, to the care of any person you may name. But perhaps it will be safest to plant the samples and see the product before you make a selection.

This note is not written to acquire notoriety, or to see my name in print. Far from it.—I do not raise corn for sale; and, if you wish to cultivate any of the kinds I send you, it will give me pleasure to furnish you seed, without charge.

Yours, respectfully.

W. N., of Louisa.

To J. S. SKINNER, Esq.

PRICES CURRENT.

[Corrected, January 23, for the Monthly Journal of Agriculture.]

| | | | | | | | | | | | |
|--|-------------|-----|-----|-----|-----|---|--------------|-----|----|-----|----|
| ASHES—Pots, 1st sort..... | ¢ 100 lb. 4 | 87½ | a | 5 | — | Staves, White Oak, pipe, ¢ M..... | 50 | — | @ | .. | — |
| Pearls, 1st sort, '46..... | 5 | 43½ | a | — | — | Staves, White Oak, bbl..... | 40 | — | a | — | — |
| BEE-SWAX—American Yellow..... | 20½ | a | — | 27 | — | Staves, White Oak, bbl..... | 30 | — | a | — | — |
| CANDLES—Mould, Tallow, ¢ lb..... | 9 | a | — | 10½ | — | Staves, Red Oak, bbl..... | 24 | — | a | 28 | — |
| Sperm, Eastern and City..... | 26 | a | — | 38 | — | Hoops..... | 20 | — | a | 30 | — |
| COTTON—From..... | ¢ lb. 10½ | a | — | 13½ | — | Scantling, Pine, Eastern..... | 15 | — | a | 16 | 25 |
| COTTON BAGGING—American..... | 10½ | a | — | 13 | — | Scantling, Oak..... | 30 | — | a | 35 | — |
| CORDAGE—American, ¢ lb..... | 11 | a | — | 12 | — | Timber, Oak..... | ¢ cubic foot | 20 | a | — | 30 |
| DOMESTIC GOODS—Shirtings, ¢ y..... | 5 | a | — | 11 | — | Timber, White Pine..... | 13 | — | a | — | 30 |
| Sheetings..... | 6½ | a | — | 15 | — | Timber, Georgia Yellow Pine..... | 24 | a | — | 28 | — |
| FEATHERS—American, live..... | 25 | a | — | 27½ | — | Shingles..... | ¢ bunch | 1 | 75 | a | 2 |
| FLAX—American..... | 7 | a | — | 8 | — | Shingles, Cedar, 3 feet, 1st quality..... | 26 | — | a | — | — |
| FLOUR & MEAL—Genesee, ¢ bbl..... | 5 | 62½ | a | 5 | 64½ | Shingles, Cedar, 3 feet, 2d quality..... | 22 | — | a | 24 | — |
| Troy..... | 5 | 62½ | a | 5 | 65 | Shingles, Cedar, 2 feet, 1st quality..... | 17 | — | a | 18 | — |
| Michigan..... | 5 | 50½ | a | 5 | 62½ | Shingles, Cedar, 2 feet, 2d quality..... | 15 | — | a | 16 | — |
| Ohio, Flat Hoop..... | 5 | 50½ | a | 5 | 62½ | Shingles, Cypress, 2 feet..... | 13 | — | a | 14 | — |
| Ohio, Round Hoop..... | — | a | — | — | — | Shingles, Company..... | 28 | — | a | 30 | — |
| Ohio, via New-Orleans..... | 5 | 37½ | a | 5 | 50 | MUSTARD—American..... | 16 | a | — | 31 | — |
| Pennsylvania..... | 5 | 12½ | a | 5 | 25 | NAILS—Wrought, 6d to 20d., ¢ lb..... | 10 | a | — | 14 | — |
| Brandywine..... | 5 | 50 | a | — | — | Cut 4d to 40d..... | 4 | a | — | 44 | — |
| Georgetown..... | 5 | 50 | a | — | — | PLASTER PARIS—¢ ton..... | 2 | 12½ | a | 2 | 25 |
| Baltimore City Mills..... | — | a | — | — | — | PROVISIONS—Beef, Mess, ¢ bbl..... | 9 | a | — | 9 | 75 |
| Richmond City Mills..... | 6 | 75 | a | 7 | — | Beef, Prime..... | 7 | a | — | 7 | 50 |
| Richmond Country..... | 5 | 25 | a | — | — | Pork, Mess, Ohio..... | 12 | 25 | a | — | — |
| Alexandria, Petersburg, &c..... | 5 | 25 | a | — | — | Pork, Prime, Ohio..... | 9 | 75 | a | — | — |
| Rye Flour..... | 4 | — | a | 4 | 12½ | Lard, Ohio..... | ¢ lb. 8 | — | a | — | 84 |
| Corn Meal, Jersey and Brand..... | 3 | 75 | a | 4 | 12½ | Hams, Pickled..... | — | a | — | 74 | — |
| Corn Meal, Brandywine..... | 17 | 50 | a | — | — | Shoulders, Pickled..... | — | a | — | 54 | — |
| GRAIN—Wheat, White..... | ¢ bush. 1 | 15 | a | 1 | 18 | Sides, Pickled..... | — | a | — | — | — |
| Wheat, Western, Red..... | 1 | 06 | a | 1 | 12½ | Beef, Smoked..... | ¢ lb. 7½ | a | — | 8 | — |
| Rye, Northern..... | — | 85 | a | — | 86 | Butter, Orange County..... | 18 | a | — | 19 | — |
| Corn, Jersey and North..... | (meas.) 78 | a | — | 80 | — | Butter, Western Dairy..... | 13 | a | — | 15 | — |
| Corn, Southern..... | (meas.) — | a | — | — | — | Butter, Grease..... | — | a | — | 7 | — |
| Corn, Southern..... | (weight) 78 | a | — | 80 | — | Cheese, in casks and boxes..... | 6½ | a | — | 74 | — |
| Oats, Northern..... | — | 43 | a | — | 45 | SEEDS—Clover..... | ¢ lb. 6 | a | — | 74 | — |
| Oats, Jersey..... | — | 40 | a | — | — | Timothy..... | ¢ tierce 12 | — | a | 15 | — |
| HAY—North River in bales, ¢ 100 lb..... | 50½ | a | — | 62½ | — | Flax, Rough..... | 9 | — | a | 9 | 25 |
| HEMP—American, dew-rotted, ¢ ton 100..... | — | a | 115 | — | — | SOAP—N. York, Brown..... | ¢ lb. 3½ | a | — | 54 | — |
| " " water-rotted..... | 150 | — | a | 200 | — | TALLOW—American Rendered..... | 8 | a | — | 84 | — |
| HOPS—1st sort, 1846..... | 9 | a | — | 11 | — | TOBACCO—Virginia..... | ¢ lb. 11 | a | — | 5 | — |
| IRON—American Pig, No 1..... | 30 | — | a | 32 | 50 | North Carolina..... | 2 | a | — | 3 | — |
| " " Common..... | 22 | 50 | a | 25 | — | Kentucky and Missouri..... | 2 | a | — | 6 | — |
| LIME—Thomaston..... | ¢ bbl. 70 | a | — | 75 | — | WOOL—Am. Saxony, Fleece, ¢ lb..... | 35 | a | — | 37½ | — |
| LUMBER—Boards, N.R., ¢ M. ft. clr. 30..... | — | a | — | 35 | — | American Full Blood Merino..... | 30 | a | — | 32 | — |
| Boards, Eastern Pine..... | — | a | — | — | — | American 1 and 3 Merino..... | 26 | a | — | 28 | — |
| Boards, Albany Pine..... | ¢ pce. 10 | a | — | 18 | — | American Native and 1 Merino..... | 22 | a | — | 24 | — |
| Timber, Georgia Pine..... | ¢ M. ft. 24 | — | a | 28 | — | Supertine, Pulled..... | 25 | a | — | 28 | — |

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NO. 9.

EXPLANATION OF THE PLATES.

AYRSHIRE BULL, GEORDIE—whose faithful Portrait appears in this number—was imported in the ship *Europe*, June, 1846, for R. L. COLT, Esq. of Paterson, N. J. Geordie is a descendant of the famous bull of that name, the brag bull of Scotland, and is now rising 3 years old. He was selected for Mr. C. by John Ternant, Esq. of Shields. Mr. T. is Vice President of the Ayrshire Agricultural Society, and a very distinguished farmer. He selected this bull and Mr. Colt's cow Bessy from the best and purest Ayrshire stock in Scotland. The bull whose portrait is here given took the premium at the Ayrshire Cattle Show last year; so that those who see him will see what is deemed a crack specimen of that favorite breed in its very home of homes. This and the Devon race are the two lately selected by the Massachusetts Agricultural Society for importation.

We understand that some lately arrived at Baltimore for Mr. McHenry, of Hartford county, sent by his friend and relative, McHenry Boyd, Esq., lately Secretary of Legation to our Mission to England. We have now as fine specimens of cattle, of all the principal breeds of Great Britain, as are to be found there.

DEVON CATTLE.—We may express our own doubts whether there is a herd at once so perfect and so large as Mr. GEORGE PATTERSON'S, in Maryland. He, too, has lately imported another bull, laying his agent, as usual, under no limit as to price. We understand that Col. Capron lately had the good luck to get some of his stock, and we hazard nothing in saying they will be prized and cared for as they should be, which has not always been the fate of this race of cattle.

MASSACHUSETTS AGRICULTURE.

THE signs that indicate an awakening interest for Agriculture throughout the country, and the desire now evinced in some of the States to see what aid it, too, may fairly claim from men in authority, lead us to believe that we may render an acceptable service by a review of what has been done in the "Old Bay State," where excellence in the various branches of rural industry has been elicited and rewarded, for many years successively, by the offer of premiums, under legislative sanction. Massachusetts is selected, to show what has been there accomplished, not only for the reason that she is among the oldest sisters of the Republic, and that she was among the first to form Societies and publish Memoirs for the benefit of the cause—but because, having to contend, with indomitable persistence, against natural ruggedness and disadvantages of soil and climate, there seems to be a peculiar fitness and usefulness in holding up *her* excellence, in various departments, as being at once worthy of emulation and quite within the reach of successful rivalry, and even of being surpassed by States more favorably situated, if undertaken with a corresponding degree of earnestness and constancy. We do not say *skill*, for the reason that we are not among those who believe, and would persuade the world, that the principles and true processes of husbandry are better understood in the North than in the South; that

is to say generally, and among those who have the direction of the labor and capital at work in the field. We should doubt, indeed, whether, in any part of the world, agricultural operations are conducted on so large a scale—we might, perhaps, say on any scale—with more skill, neatness and completeness, than, for example, and from what we have heard, on Colonel Singleton's and Mr. Calhoun's estates; and, from what we have seen, on Colonel Hampton's; and, without intending to be invidious, we may add, at Hopeton, near Darien, Georgia, by Mr. I. Hamilton Couper, where thirty thousand dollars' worth of steam and other machinery employed in the various processes of flooding and draining, and of cleaning and preparing the various crops for market, demands not only practical knowledge of ordinary performances in the field, but no inconsiderable acquaintance with book-keeping, hydraulics, civil engineering, and even agricultural chemistry—as far particularly as relates to the complex process of sugar making. Nor are such capital and means to be conducted to their fullest development without a decided talent for the command and appropriation of the forces at hand—sometimes to be employed in combination, according to the exigencies of the season and the crops; and again to be divided, and so separately applied as to make everything tell to the greatest advantage.—Such estates may, it is true, fall occasionally under the control of men without ambition, knowledge, forecast, or energy; but they are not to be profitably and honorably *managed* without the possession of all these qualities, and that in no ordinary degree. But to our subject.

The "MASSACHUSETTS SOCIETY FOR PROMOTING AGRICULTURE," the first in the State of its kind, was founded and incorporated as far back as 1792. It raised a fund of \$4,000 by subscription; and by an annual assessment on its members it proceeded at once to distribute premiums and to import valuable animals. In 1797, it instituted its "*Journal*," which was continued for more than thirty years, promulgating papers that evinced remarkable ability, and a public spirit and disinterestedness highly honorable to its members. It took measures, also, for the establishment of County Societies, and for the erection of an Agricultural Hall. It also contributed to the establishment of the *Professorship of Natural History* and of the *Botanical Garden* at Cambridge.

In 1819, the State appropriated \$200 annually to every Society which would raise \$1,000 for the promotion of Agriculture, and in like proportion for any greater sum, not exceeding \$3,000; so that no Society, whatever may be the amount of its funds, can claim of the Commonwealth more than \$600. From the date above mentioned to 1845 inclusive, as appears by the "Abstract" from which this statement is taken, there had been ten Societies incorporated, to which the State had contributed \$115,816 61; besides three others, which, at the date of the Abstract, were "not known to have gone into operation."

In 1837, Resolves were passed by the Legislature, authorizing and requesting the Governor to appoint some suitable person to make an "agricultural survey of the Commonwealth; collect accurate information of the state and condition of its Agriculture, and every subject connected with it; point out the means of improvement, and make a detailed report thereof, with as much exactness as circumstances will admit."

Writing now from home, and not in reach of our books, we can only venture the impression that this enlightened measure on the part of the Legislature was enacted in conformity with a suggestion from Gov. EVERETT, now the accomplished President of Cambridge. It would be well for the country, and promis-

ing to the welfare of a branch of industry more productive, in most of the States, than all others united, if some other Governors would cast about to see how the laws affect it, and to suggest for the lauded, as well as for more partial and limited interests, such enactments or modifications of laws as might tend to relieve its products of unjust burdens, and to enlighten the pursuit of it in the field ; unless, indeed, it be that, as some seem to suppose, the laws *have nothing to do with Agriculture.*

It was made the duty of the Agricultural Surveyor to furnish the Governor with a summary of his survey, every six months, and at such other times as he might require, to be published in such manner as he may deem expedient ; and he was authorized to draw his warrants " to defray the expenses of such survey, and to enable the person so appointed to proceed in the execution of the duties that shall be required of him ; and pay the same to him, not exceeding the sum of two thousand dollars per annum."

Under this authority, Mr. HENRY COLMAN, appointed Agricultural Surveyor, published four Reports, which, as has been truly said in the "Abstract" before us, " had a wide circulation in the country, and attracted favorable attention abroad." Of the zeal and ability displayed in these Reports, and of their great usefulness, we have repeatedly expressed, but not as strongly as we feel, our warmest approval. We had lately the good fortune to procure a second-hand copy in Boston, and intend to fortify our opinion of their great value by occasional extracts. It would be, with most readers, superfluous to add that the Surveyor appointed by the Governor is the same Mr. Colman now on an agricultural tour in Europe, and whose personal observations there are read here at home with pleasure and with instruction—except, perhaps, by some, of whom there are always and everywhere too many, who know so much already that they have nothing more to learn ; and who, because it is colder or hotter, or wetter or drier, in some parts of Europe than in parallel latitudes elsewhere—and because, forsooth, labor is cheaper there than in the United States, together with some other differences of institutions and circumstances—therefore sagely conclude that we have nothing to learn from European books or essays on Agriculture, or descriptions of their implements, machinery, or processes ; as if the principles of mechanics, and of chemistry, and botany, and civil engineering, as applied to draining, and road and bridge making, the composition of manures and the constituent qualities of soils and plants, &c., were not the same in one country as another ! and as if the American reader had not sense enough, in comparison of the modes and labor employed in tillage in various countries, to make allowance for specified differences in the cost of these, and of food, &c., in a way to arrive at just conclusions, and to avail himself of the lights which all admit science has of late years reflected on all the operations of husbandry in some parts of Europe, and especially in England and Scotland, very far beyond what it is yet doing for the same branch of industry in the United States. For ourselves, our temper is to take pride, first and sincerely, in all that is the fruit of American skill and genius, if better, or even as good, as to be found abroad ; but, at the same time, *to consider no place as too distant or too bad to go to for knowledge !*

Moreover, while we exult in such names as Franklin, and Clinton, and Godfrey, and Whitney, in natural and mechanical sciences ; and in such benefactors and illustrators of American Agriculture, in its practice and literature, (ay, in its *literature !*) as Taylor, and Madison, and Garnett, and Ruffin, of Virginia ; and Audubon, and Bachman, and Pinckney, and Poinsett, and Seabrook, and many

others, of Carolina ; and Peters and Biddle, of Pennsylvania ; and Livingston, and L'Hommedieu, and Ruffin, and Mitchell, of New-York ; and Lowell, and Quincy, Sullivan, Colman, Pickering, Gray, Harris, Dearborn, Everett, &c. of Massachusetts—we should still think it strange if there were not yet much to be learned of both its practice and the sciences that make that practice more fruitful, from the country and the descendants of such men as Newton, and Brindley, and Napier, and Parkes, and Davy, and Watt, and Arkwright ; with the wealth and munificence of a Coke or a Francis, to patronize genius, and to lead it, through poverty and every difficulty, into activity and public usefulness, for the benefit and glory of their country.

But in all this, perhaps, we are wrong, and not *sufficiently practical* ! With some there is a vulgar belief, and with others an affectation of it yet more disgusting, that none can impart instruction in Agriculture except those who daily labor at what they teach—as if Mr. Downing's sketches of cottage residences were any the less elegant and tasty because he whose fine fancy designs them may not be practically expert in the use of carpenter's tools. But once more back to our subject.

To aid those who may be honorably inclined to help along the good cause, and whose number, we trust, is rapidly increasing, we published in the September number of 1846 the laws now in force in Massachusetts relating to the subject. We proceed, therefore, to give such view of the proceedings of the several Societies in that State as will place before the reader the results of competition, in the several branches of her agricultural industry, together with such accounts of the means employed to reach them as will, altogether, give something of a picture of the whole husbandry of a State which, as before said, has attained under great difficulties a degree of success worthy of emulation—one which has won for her inhabitants the high reputation of being a remarkably laborious, skillful, thriving and intelligent people ; out of debt, and independent in their private circumstances ; proud of their liberty, and ever ready and able to defend it. And, after all, is it not by knowledge, and that virtue which is the *sure fruit of knowledge only*, that any yeomanry can hope to reach and to maintain such a condition ? If this republic is at this moment in any peril, it may be ascribed to the want of sufficient and *suitable education on the part of the owners and tillers of the soil* !

First, as to the Massachusetts (State) Agricultural Society proper—we have shown in the number referred to, containing Mr. PHINNEY's description of the stock imported by it last year, how it was led to pretermitt the offer of the ordinary premiums, and to reserve their funds for the importation of *Ayrshire and North Devon cattle*. There it is expressly stated that “ thousands of dollars have been awarded in premiums for the best milch cows, during the last twenty years, and, as appeared to the Trustees, *to very little benefit*.” Indeed, Mr. Phinney, whose statement appears to have had the sanction of the Trustees, says generally, as to the effect of these shows to promote improvement in the various branches of husbandry, that they had for “ many years devoted the income of the Society's funds to premiums on the best cultivated farms, on the various kinds of farm produce, farm stock, and such other objects as they believed best calculated to promote the interest of the great body of the farmers ;” and that “ it seemed to the Trustees that very little progress had been made, particularly in the dairy stock of the country.” That whole paper is well worthy of re-perusal, as the deliberate testimony of practical men of unsurpassed judgment, vouched

and corroborated by one of their own body, than whom no one stands higher in the agricultural annals even of his State. On the total uncertainty that attends breeding from an ordinary stock of no particular blood, he says: "The cautious farmer will not run the risk nor incur the expense of raising a calf from stock of the origin of which, and of the blood that runs in the veins of his favorite cow, he knows nothing."

"It may be contended," says he, "that we need not the aid of foreign stock to raise up one of the best breeds of cattle in the world. This may be true, but who will undertake it? What individual farmer has the patience, the skill, the intelligence and the capital to engage in a task that will require many years and much capital to bring to any considerable degree of perfection? And where would be the propriety or economy of undertaking a work of this kind, when, by a little extra expense at the commencement, we may find the work already done to our hands?"

It is not enough, it may be added, that any gentleman should make an occasional importation of a pair or more of the best animals; for, without having recourse to different families of the same blood, they would soon degenerate by close breeding, and want of nice judgment in the choice of breeding stock. In answer to the question, Who has the capital, and who will take the requisite pains? we may, without invidiousness or prejudice to others, name a few that occur at the moment, owners of choice specimens of crack breeds, besides the Devons and the Ayrshires of the Massachusetts Society, so prudently placed in the care of Mr. PHINNEY. There is, for instance, the very superior herd of Short-Horns imported and bred by Mr. VAIL, of Troy, and Mr. SHERMAN, of Auburn; and the Herefords, no less numerous and perfect in their way, of Mr. CORNING. Mr. PRENTICE has, we believe, disposed of nearly all his Short-Horns; but it is not to be doubted that the gentlemen named, while they continue to breed of their favorite races respectively, will import the best bulls every three or four years, and bring all their judgment to bear in keeping their *breeding* stock clear of everything that is stained in blood, or defective in form. So we may predicate of Mr. HURLBUT, of Connecticut, and of all others engaged in breeding improved stock *for sale*. This we know to have been the practice of Mr. PATTERSON, with his splendid herd of Devons, in Maryland. His practice is to import frequently the very best bulls to be had in England, without regard to price; and, with an eye and a judgment not to be deceived, he unites a pride in his own character as a breeder, and in that of his stock, that would lead him much sooner to give away a superior than to sell a decidedly defective animal for any price. And here we may as well say, once for all, *currente calamo*, that as we ever have, so we ever shall, heartily despise the malign and particularly the covert insinuations of those who would ascribe improper motives either to our praise or our censure—too humble, it may be, either to benefit or disparage any one. One thing we may fearlessly say, that we are conscious of never having harbored any thought but thoughts of kindness to *all* our colleagues, whether editorial or otherwise, co-workers in the field of agricultural or *horticultural* improvement; nor shall we be easily provoked to act otherwise against, equally, our habits and our nature.

For the matter of plainly and frankly commending the examples, and testifying to the judgment of cultivators of exemplary industry and discernment, far from seeing anything in that either reprehensible or indelicate, we hold it to be in the line of our station and duty. Occasions of censure on the other hand, much more of retaliation for totally unprovoked attempts to injure, may be often and again

omitted. Much more agreeable is it to do good for evil ; while to professed moralists, and men of more leisure, must be left the task of shooting "folly as it flies." And Heaven knows it flies thick enough, especially in the appropriation of what little can be collected for improvement in Agriculture ! In this matter of doing justice, or, if you will, praising and bringing out into the relief they would shun, the friends of rural industry, there are those to be found in this world more nice than either wise or honest, who can strain at a gnat and swallow a camel. Hence if a *man of war* have the good luck to imbrue his hands in the blood of his fellow men, and by the prowess of his right arm succeed in adding largely to the list of widows and orphans, no praise is too extravagant for *him*. Medals and thanks are voted by Congress, and none too rich or too exalted to do *him* reverence. The 'Sovereigns' throw up their "greasy caps," and huzza as he passes, and Editors with one voice join in the universal hosanna ! until every village is eager for the honor of claiming, not its Confucius or Homer, its Franklin or its Clinton, but some gallant knight

"That never bowed his stubborn knee
To anything but chivalry."

We don't mean your real, old, thrice-trying heroes, such as have led in our Army and Navy, whose humanity gives to their chivalry its highest lustre, and whose love of peace and mercy has been known to subdue their military ambition, where opportunity presented redundant harvests of glory. No degree of enthusiasm, no measure of praise is deemed extravagant, if excited by the smell of powder, or the sight of blood ; but if one poor Editor lift his feeble voice in eulogy of men who would by their industry, or their liberality, or their enterprise, or their learning, benefit the human race, by benefiting the most useful and productive of all the industrial, though it may be "dull pursuits of civil life," straightway some craven spirit, alike devoid of manliness and discernment, imputes unworthy motives to the action, interpreting the feelings of others according to the meanness of his own nature. Once again, then, and for all, we mean, while we have the power, to leave on record, as far as our pen can go, what we trust may prove testimony of some endurance, to the *really* virtuous, because *really useful* actions and deportment of those who do good to *American Husbandry*, whether by the *pen* or the *plow* ! and for the rest, all we have to say is, *honi soit qui mal y pense*. But let all such evil thinkers remember that two, at least, of those whose living examples of skillful tillage and management we have most particularly commended, and the *portrait of one of whom* we shall endeavor to preserve in this journal, are what are called "*overseers*," or managers of large estates ; neither patrons of this work, nor dispensers of patronage in any form, but distinguished for their unassuming manners, industry, judgment, and firmness, tempered with humanity ; and therefore, at least in our humble esteem, more worthy to be honored than your *mere red-handed warriors*, fighting for pay, without care for cause or consequence ! The reader will bear with this digression when we express the hope that as this is the first, so may it prove the last time that we shall turn aside to speak in *this connection*.

Recurring to Mr. Phinney's interesting exposition of the views which prompted the Massachusetts Society to *import cattle* instead of offering the usual stereotype list of premiums, it will be seen that he expresses the opinion that the cows of farmers who depend principally on that source for their income, "do not generally yield an average daily produce of more than from *two to four quarts of milk throughout the year*." Whereas, he adds, in another part of his state-

ment, "Aiton asserts that many of the Ayrshire cows in their *best condition, and well fed*, will yield at the rate of 1,000 gallons of milk in one year, or over ten quarts of milk per day. Rankin, however, states his opinion that Aiton had given the daily average produce too high, and thinks that few herds of twenty cows or over will *average more than eight hundred and fifty gallons, or about nine quarts a day!*" Mr. Colt's Ayrshire bull, *Geordie*, whose faithful portrait is given in this number, was imported with evidences of *personal* merit, and under other circumstances to insure him to possess in an eminent degree the characteristics of his race. The same gentleman has other imported and pure specimens of that and of the Alderney race of cattle. There were also two cows and a bull well selected and sent last autumn, consigned to Mr. George Law of Baltimore, by McHenry Boyd, Esq., to his relative Mr. McHenry of Hartford County, Maryland. Of the particulars of that importation and the considerations which induced it, so far as it may have been prompted by any particular observations or information in Scotland in favor of the breed, we shall endeavor to possess ourselves. We need not say that all notices of the importation or possession of animals, or grasses, or grains, of particular kinds are intended as historical of the facts, and to facilitate the wishes of those who may desire to make farther inquiries with a view to information or purchase.

Having referred to what is said by Mr. Phinney, one of the Trustees of the Massachusetts Society, and doubtless with the sanction of his associates as to the Ayrshire cattle, we may add his remarks on the other breed, the North Devons, also selected by them for importation. "The North Devon stock has long been celebrated as a breed of cattle beautiful in the highest degree. For the dairy they cannot be considered equal to the Ayrshires, but viewing them as uniting the three qualities of working, fattening, and milking, they may be considered as unrivaled. Some of the English writers give them a high rank as milkers, and Mr. Conyers of Capt Hill, near Epping, a district almost exclusively devoted to the purposes of the dairy, preferred the North Devons "on account of their large produce, whether in milk, butter, or by suckling." "The North Devon oxen, says an English writer, are unrivaled at the plow. They have a quickness of motion which no other breed can equal, and which very few horses exceed. They have also a docility and goodness of temper, and a stoutness and honesty at work, to which many teams of horses cannot pretend."

We would add, that in our judgment the horse (as a precarious and expensive machine) ought to be banished from *field* labor, except where the land may be too heavy for the mule, and the climate too hot for the ox—two circumstances that *combine* only over a comparatively small portion of our country.

But in our eyes the most attractive feature in the proceedings of the Massachusetts Agricultural Society is the following, as set forth in this first "ABSTRACT" made out by Hon. "JOHN G. PALFREY," Secretary of State, and now elected, we believe and hope, to Congress—and that not from any knowledge or care about his *party politics*, but because in him we know there will be at least one patriot disposed to think that the true and substantial interests of a country may be at least as well served by guiding the plow-share as by brandishing the sword. Here is the act of the Trustees, to which we allude, and that we would hold up for imitation. By-the-by, among many other things that we have at heart to publish, if we can ever find the space, is a beautiful lecture of the celebrated Doctor Rush, on the importance of the study of *Comparative Anatomy* by country practitioners of medicine.

"The offer of a premium for the best Essay on the Diseases of Domestic Animals was subsequently modified. The subject being discussed, it appeared that this department of medical science had been little regarded in this Commonwealth; that if an animal be sick, or was wounded, regular practitioners were not usually summoned, and the farmer had to depend upon any one in his neighborhood who had acquired a reputation by some little experience for skill in cases of diseased animals. It was therefore voted that Doctor Warren, one of the Board of Trustees, be authorized to offer pecuniary aid to any student of medicine (whom he thought qualified for the purpose) to assist him in completing his education abroad, upon the condition that he should give a portion of his time and particular attention to the *veterinary establishments, for the relief and recovery of wounded or diseased animals*, in Europe, and especially in France; that he should attend the Lectures of the most eminent surgeons on these subjects, to *qualify himself to deliver lectures as well as to practice in this department of science on his return.*" And here again we cannot shut our eyes to that want of knowledge, or sensibility to their own rights, or that tame, submissive spirit on the part of agriculturists, which *qualifies* them to look on and see, without a murmur, the provision that is made, out of their substance, for enlightening all interests and classes but their own, without any attempt to claim their share of the public patronage for agricultural science. How many young men of the Army and the Navy have been sent abroad really to study, or under pretence of examining the most modern warlike discoveries and systems of managing light-houses, &c. and this on the mere *dictum* or pleasure of the head of a department! But if the object be to enlighten or benefit Agriculture, as in this instance, it can only be done by *private subscription!* and this, too, under a system of policy and administrations of public affairs established by the legislation of the *representatives of the landed interest*, the first to be taxed and the last to be cared for!

Here we find the pen has run over a space which makes it necessary to draw this essay to a close. The reader will please regard it as merely preliminary. The next will be altogether practical, presenting a view of Massachusetts Agriculture in all the counties where there are incorporated societies, and serving, for readers in other States, as the next best thing after a personal attendance at their cattle-shows—we had hoped to accomplish that purpose in this sketch, but we find we have only cleared the way, as the good husbandman picks off the stone and grubs his ground before he begins to plow.

GREAT IMPROVEMENT IN MAKING BRICKS.—ALFRED HALL, Esq., late of Cox-sackie, has invented a machine for making bricks. As to its properties and value, T. B. Wakeman, Esq., Corresponding Secretary of the American Institute, has received the following letter:

"This machine we have used for the last three years, to our entire satisfaction: it is simple in its construction, easily kept in order, and can be worked by men of the most ordinary capacity, moulding with ease from ten to twelve thousand per day, better bricks than can be moulded by hand or any other machine. We have had thirty of them in operation for the last two years, using fifteen of them alternate days, making each year about 15,000,000 bricks, and during that time the expense of repairing the thirty machines has not amounted to \$10. This is not an exaggerated statement, but the plain, simple truth, such as we are willing to give in person to any one who wishes more particular information upon the subject, and will favor us with a call.

"P. HUBBELL,
"ALMON ABBEY."

Charlestown, Mass., Dec. 9, 1846.
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AGRICULTURAL EDUCATION.

PROGRESS OF PUBLIC OPINION—INDICATIONS OF A FAVORABLE CHANGE.

NATIONAL habits of thinking and acting on the great topics of public education and morals, are not to be expected to undergo those marked and visible mutations which are seen to take place, in a single season, in the taste and costumes of the luxurious and fashionable world. On the contrary, great changes in social institutions, and in courses of instruction and of industry, especially among agricultural communities, are necessarily the work of time, and to be finally accomplished with difficulty, and then only by the enlightened and imperfectly concerted labors of public spirited benefactors, too few and far between to rival in energy the more active and systematized exertions for improvement by merchants and manufacturers. Yet all anxious observers must perceive that a salutary change is now in progress for the benefit of American Agriculture—one which guaranties not only greater fruitfulness for the capital and labor embarked in it, but, what is yet more gratifying, higher rank and honor to those who resort to it as the means of support for themselves and their families.

The change to which we refer, and in view of which all enlightened friends of the cause may felicitate each other, consists in an evidently increasing disposition to *investigate the principles* which affect the results of practical Agriculture; and without a knowledge of which it can never attain either that dignity or success which God hath kindly ordained should only be won by the triumphs of mind over matter—of light over darkness. The American public is beginning to see that between the rude physical labor of the boor, who aspires only to know when and how to plant and to reap, as his father did before him—and the calculating forecast of the educated farmer, who has been taught to know exactly what each crop will demand and take away from the soil, and hence what it will require to be restored to it—there is as wide a gap to be filled up as has been filled up in the progress of medical science, by which the well-weighed remedies and skillful appliances of the accomplished physician and surgeon have banished the vile nostrums of the conjurer and the quack. Yes, truly, and for its honor be it said, that it is getting now to be understood that as wide a space is to be overcome in the art of cultivation, by a more thorough knowledge of the principles of tillage and of vegetable physiology, as has been passed in the art of ship-building and the science of navigation, as indicated by a comparison of the Indian's bark-canoe with the steam-frigate, plowing the "deep waters of the dark blue sea," with the precision of the sun itself as it marks its course on the dial-plate.

A great stumbling-block, however, in the way of science coming to speed the plow, is that want of ambition—that absence of all thirst for distinction—which is at once the parent and the offspring of ignorance; that lethargic self-contentedness, which creates the very difficulties it imagines to exist in the road to farther advancement. How common to hear even otherwise sensible men observe, "Oh! what can *books* teach us? What more have we to learn? With plenty of manure, and sufficient force, and good plows to work with, I can make as good crops as any of your book farmers!"—forgetting, or rather never having

learned, all the time, that a kind of manure comparatively without effect when applied to one crop, or kind of soil, may be powerful when applied to another; and that certain soils, if he were *educated to know their nature*, would be found to contain the constituents of one plant, while they may be quite deficient in what is necessary to the growth of another. Such men, who in their ignorance and self-conceit already know everything, forget how much the labor they employ has already been economized by the inventions of ingenious, thinking minds, applied to the structure of the plow itself; and that, long since, your anti-book-knowledge men, like themselves, believed that the plow had already reached the last stage of amendment of which it was thought to be susceptible. How different with the intellectual man—the man of progress—he who believes that the Almighty endowed us with reasoning faculties above all animals, that they might be kept in constant exercise for the melioration of our condition in all things! Such men, looking back on the field over which we have passed—advancing, even during the last half-century, from one labor-saving invention to another; from a less to a much more thorough knowledge of the nature of manures; noting the improvements in the form and economy of our domestic animals, until the art of breeding has been reduced to a science; marking the introduction of new and valuable fruits and vegetables—such men, thus blessed with hopeful and inquisitive minds, are readily persuaded that the end is not yet, in the progressive advancement of Agriculture, any more than in the arts of manufacture, in the application of steam, or in the discoveries to be made by astronomy or navigation. Such men see no good reason why steam itself should not yet be made far more contributory to the purposes of the farmer, in some proportion to what it has been forced to do for the civilizing operations of commerce, and the barbarous purposes of war. Thus enlightened and animated by a retrospect of what has been done, to hopeful exertion for the honor and benefit of their own pursuit, the intellectual cultivator and friend of American husbandry is seen to realize much of that which at first he only hoped might, in process of time, prove to be possible; and thus it is that Agriculture is destined to undergo still greater ameliorations, of which the ignorant, the slothful and the desponding have yet no conception—ameliorations that proceed by geometrical ratios; for in this, as in other sciences, every advance that is made shall add to the height and the strength of the scaffolding employed in making additional improvements.

So marked and extraordinary have been the strides made in the application of the sciences to the art of cultivation lately in Scotland, that Professor Johnston has predicted that, within the next five years, prescriptions for particular manures, having reference to the next succeeding crop in a given rotation, would be made out as systematically, and with as much confidence in the results of their application, as are the medical prescriptions of the physician to the apothecary. Nor is this evidence of the progress of agricultural science in that country to be wondered at, when we read, as in the last Edinburgh Review, that the writer, descending on the increased productiveness of the lands in England and Scotland, by which these countries have been enabled, until now, to meet the demands of a steadily increasing population, remarks that on stepping into a country school on the wayside, in Scotland, he witnessed an examination of a class of “poor bare-footed boys” of 14 years of age, who were going creditably through a close catechism in Agricultural Chemistry.

But we have been insensibly drawn off from the sole design of *presenting a few of the signs* of a general change in favor of special education for the plow,

as for all other things, when it is intended that he who is to follow any particular pursuit shall rise from the level of the operative to that of an intellectual director of the force employed in carrying it on. These evidences of change are to be found, among others, in the more frequent references to the interests of Agriculture by *our Governors in their Inaugural Addresses*; almost all of them appearing now to think it incumbent on them at least to recognize the existence of such an interest in the State, while it is to be remarked there are yet some of them who deem it not worthy to be referred to—as if the land and the capital embarked in its cultivation were not subjects for legislation, and in no way liable to be affected by good or bad government. We see these signs of favorable change, too, in the appointment, of late years, of *Committees of Agriculture*, in legislative bodies; some of whom even go the length of making reports—however yet, for the most part, vague and general, and in empty compliment, rather than practical contribution to this, by far the most important in the whole catalogue of legislative cares: but begetting the hope that, ere long, we shall see Congress and State Legislatures putting forth and circulating Reports—not such as cost \$20,000 for diatribes from every conceited scribbler on the potato disease, but elaborate dissertations on the condition and wants of Agriculture, such as we have annually from the ablest minds of the country, selected on that account, and placed on Committees to elucidate the interests of commerce, manufactures, and the condition of the financial and military branches of the Government. And who can hesitate to believe that the country would be as much benefited in its growth and advancement to wealth and power by having its *agricultural concerns and capabilities thoroughly overhauled and illustrated* by such men as CALHOUN, and LEWIS, and BERRIEN, and CLAYTON, and BENTON, as by the Reports we have printed and circulated, by the thousand and tens of thousands, in reference to navigation, manufactures, finance, and war? Ay, and how much better and more generally might we expect the rights of American husbandry to be understood and guarded from the encroachments of parasitical classes, if, under the beneficent influence of such annual expositions by our ablest men—those whose sole business it is—the yeomanry of the country were steadily and systematically educated in all that relates to the cultivation and the rights of the soil, and its claims to precedence in all legislation for particular branches of industry! But, alas! what farmer of common observation has not learned that, where the master is notoriously ignorant or inattentive, he soon becomes the victim of dishonesty and neglect on the part of his manager and his men?

Another indication of an improving public sentiment on this interesting subject, encouraging to the cause itself, and honorable to the discernment and patriotism of the mover, is the following Order, following up a kindred movement some years since by the enlightened Chairman of the Committee to whom this Order was referred in the Senate of Maryland:

IN SENATE, January 19, 1847.

On motion of Mr. Gaither, it was

“Ordered, That the Committee on Agriculture inquire into the expediency of providing by law for the inspection of guano, and the appointment of an inspector thereof; and, also, that said Committee take into consideration the best means of diffusing among the people of the State information on the subject of agricultural chemistry, and such other subjects as may, in their judgment, be best calculated to benefit the agricultural interests of the State, by teaching such knowledge of the composition and application of manures as will promote the improvement of the exhausted soil of the State; and that they have leave to report by bill or otherwise.”

And here, again, what a proof is exhibited of the slow progress of knowledge and of discoveries in aid of Agriculture! Twenty years have elapsed since the

writer of these lines distributed gratuitously two barrels of guano, sent to him for that purpose all the way from the Pacific, by Commodore RIDGELY; but, until its value was lately promulgated in England, no effort was made to extend the use of it; and now, after so great a lapse of time, and after the English have removed entire islands of it, we see a Senator very judiciously moving to have an inspection of *guano* established by law!

But, among the most encouraging proofs we have that the truth of Professor Liebig's declaration—to wit, that for all permanent and material improvement we must hereafter look to the application of the sciences to Agriculture—is making its way to public conviction, is the one to which we have before referred—the spontaneous and unassisted establishment of *agricultural schools* in various parts of the country, and in advance of a more enlightened legislation by which, in a few years, the public will require and compel them to be upheld and placed, as they should be, in possession of all those advantages of emolument and distinction which can beget confidence and respect in the eyes of the good and the wise—on a footing, in a word, somewhat approaching at least to that which has been for years past provided, at the *public expense*, for MILITARY SCHOOLS, where large salaries and most ample free quarters are furnished for Professors in military and civil engineering, in chemistry, mineralogy, botany, French, drawing, &c., for the better instruction of *paid* students destined for the Army and Navy.

Another token, not to be mistaken, that the public mind, no longer content with mere isolated facts (which thirty years ago it was useful to accumulate), and the exhibition of extraordinary fruits, is now disposed rather to enter into the *philosophy* of this great department of national industry, may be found in that change which is going on in the *objects designated as proper subjects for premium*. There is evidently an increasing impatience at the sight of stereotype offers of premiums for the biggest crop of corn on an acre, the heaviest year-old pig, the best-gaited gelding, the fattest yearling calf, and the largest mule. Time was, in the infancy of associated efforts, when we had just entered on the threshold of agricultural inquiry, that the cause of improvement demanded actual exhibitions of mammoth pumpkins, and large potatoes, and turnips, and cabbages; and more especially when it was useful to stimulate experiments with *mangel-wurzel* and *Swedish turnips*, and other vegetables theretofore untried or but partially known—as it might be now to test more extensively the suitability of the soil, climate and circumstances of our country to the cultivation of *madder*, and *woad*, and *silk*, and *Lucern*, and *rye-grass*, and *Jerusalem artichoke*, the *citron* and the *olive*, &c. It was well, in the infancy of associations for improvement, to test the weight, activity and strength of animals employed or used for various purposes; and even yet it is highly beneficial to keep up such exhibitions. But why? Not to draw a crowd by the impulse of an idle and vulgar curiosity, which finds its highest gratification in the sight of monstrous products of Nature and of art. All such men of such minds had better at once be directed, for light and momentary gratification, to the museum and the circus. Such displays of monstrous products are only useful to rational minds, when exhibited in a way to illustrate the principles of their production, and to enable us to judge how far the materials and processes made use of in procuring them are to be sought out and imitated, or rejected and shunned.

Hence the wisdom of the *law* of New-York relating to Agricultural Societies. Foreseeing, apparently, that the *Trustees of Societies* could not be relied on to exact such statements from competitors for premiums, the law has *expressly pro-*

vided that, "before any premium shall be delivered, the person claiming the same, or to whom the same shall be awarded, shall deliver in writing, to their respective officers, as accurate a description of the process in preparing the soils, including the quantity and quality of the manure applied, and in raising the crop or feeding the animal, as may be: and also the expense and product of the crop, or of the increase in the value of the animals, *with the view of showing accurately the profit* of cultivating the crop, or feeding or fattening the animal." Too truly, however, has the enlightened Secretary of the Commonwealth of Massachusetts, to whom the Reports of the Societies of that State are made, remarked—"But the misfortune is that these rules are *imperfectly or not at all complied with.*"—These statements, in detail, should not only be rigidly exacted by the Trustees, but they should undergo deliberate examination, and be either ratified or subjected to strict and impartial commentary and criticism. The vagueness of these statements, where they are made at all, often takes away from them all character and pretension to usefulness; and the carelessness, not to say partiality with which the premiums are too often awarded along with them widely sows feelings and expressions of dissatisfaction, "not loud but deep;" and this accounts for the great difficulty of making up the required subscriptions, and for the final discontinuance of many of these associations.

To return to the character of these shows. It may be alleged that, without the multifarious and attractive elements employed in "getting them up," the people could not be brought together; and therefore we must needs take the frivolous along with the useful—that those must be amused with the shadow who have not sense enough to distinguish it from the substance. And this may all, to a certain extent, be admitted, until by degrees public opinion shall be reformed by better systems of agricultural education, and these associations for useful purposes shall cease to be mere gull-traps. In the mean time, all men of sense and of exalted and patriotic views, taking part in the direction of such institutions, will earnestly lend their thoughts and their influence to a gradual correction of the public taste in these respects—leading it to seek for the useful instead of the showy—the intellectual in preference to the ridiculous—until, in process of time, valuable instruction and solid scientific advancement in Agriculture shall take the place of prodigiously prolific patches of grain and vegetables, and fat hogs, and cows with three calves, and other wonderful phenomena of the animal and vegetable kingdoms. Thus may we expect to see reason and philosophical deduction take, in Agriculture, the place of custom and prejudice—as superstitious star-gazing has given way to astronomy, and the reveries and pretensions of the alchemist have been superseded by the noble science of chemistry.

In this view of these subjects, it was well observed by Mr. Bryant, in a Report to the Hampden Society in Massachusetts, remarking on great crops of vegetables—"But in order that we may have these results, to any extent, *under our control*, the *science* of Agriculture, in all its hidden recesses and wonderful mysteries, needs to be explored."

Much as these remarks have been extended beyond our expectations, we must yet take room to refer to another most propitious sign, in the declaration, by the "FARMERS' CLUE OF THE AMERICAN INSTITUTE," that "there are *now* constant inquiries by wealthy merchants, professional men, and others, for *schools of this character*, engaged in a safe and healthy employment, *free from city habits and temptations.*" Something of a solecism, it is true, is observable in this declaration, when connected with the averment, in the same petition, that "the City of

New-York is a fit place for a college and for a trial farm;" at all events, there is great comfort in their declaration, with their opportunities of judging, that "the useful arts, *especially Agriculture, are required by public sentiment to be elevated to their highest possible rank.*" But, for our humble selves, we confess that reflection would prompt us to locate such a school beyond the contaminating allurements and vices of a large city; nor would we have the course and branches of instruction, in an Agricultural Institute, connected with the study of any other "arts" or sciences than those which are immediately allied and auxiliary to it, for we should strongly apprehend that, in all such partnerships, these other "arts" would be artful enough to appropriate to themselves the lion's share—taking to themselves, sooner or later, all the choice pieces, and throwing the offal to the unpretending rustic member of the firm. Thus has it proved, so far, in all that has been done for Education by the Governments, State and Federal, and even in institutions founded on the voluntary contributions of farmers themselves; for, how little is taught in any of our colleges in direct aid of *agricultural researches* and industry? We shall soon see what better, if anything, will happen in the arrangements and conduct of an Institution founded on the munificence of a foreigner (the subject of a great nation for whom we are taught, even from the nursery, to entertain a deadly antipathy), expressly for the "increase and diffusion of useful knowledge among men." We may be permitted, however, to say—and we do it with the greatest pleasure—that we have heard enough of his sentiments on the subject to inspire strong hopes that, in the learned SECRETARY of the "SMITHSONIAN INSTITUTE," Agriculture will have an advocate duly impressed with a sense of its paramount importance, and with the exceeding *usefulness* of all knowledge that may serve to enlighten its practice in the field, and to place it where it deserves to stand, in the front rank of our industrial occupations.

Finally, we feel it to be a sort of duty to exhort all those in the several States who take concern in the kindred causes of education and Agriculture, to use their influence to have agricultural books, and branches of study that bear upon Agriculture, gradually introduced into the schools already in existence. Here a beginning may be made. Here, even in the way of amusement, the youngest boys may learn the natural history of all domestic animals—the principles to be consulted in all endeavors to modify their forms. Here they may learn, before they set out in life, the natural and commercial history and medical and artistical uses of all grains and plants. In this way the rising generation, instead of wasting their youth in the perusal of trashy old stuff, nonsensical or pernicious, may be so reared as to leave school already endowed with a vast fund of elegant and useful knowledge, such as they will never acquire if not inspired in youth with a taste for reading. Every sportsman knows how difficult, if not impossible, it is to take a lazy old hound, whose habits are fixed, and break him in to be a leader in the chase! To give him the keenest relish, you must take him out cub-hunting, and let him be "blooded" when young. So must we be blooded, as it were, to the love of that greatest of all blessings, the love of knowledge and of books, when we are young; and common sense suggests that it should be in the love of the books and the knowledge that will give us pleasure and efficiency in the practice of the pursuit *by which we are to live.* The community that neglects this obvious duty to the rising generation deserves the fate of the mother whose son, under the gallows, for her neglect in not punishing his first theft, *bit off her ear.*

P. S.—We have just, by chance, heard of an evidence of the feeling that is spreading on the subject of agricultural education, so gratifying that, without the least suspicion on the part of him to whom it does honor, we cannot forbear to mention that Dr. Williams, the worthy President of the Senate of Maryland, has tendered 100 or 150 acres of land for the establishment of a well organized Agricultural School. That, we believe, is more than the United States Government has done for *civil* education in any of the *old* States, whose blood was shed to acquire the lands so freely given away in the new.

Finally, *Memorials*, on the principle of the one sketched in a late number of THE FARMERS' LIBRARY, have been lately presented, with numerous signatures, from various counties, to the Legislatures of New-Jersey, Delaware and Maryland, calling on these bodies to demand, through their Representatives in Congress, some assistance for the establishment of Normal Schools, for the preparation of teachers qualified to give instruction in the Public Schools of the State in the sciences allied to Agriculture. We want nothing now but that sympathy and support of the *press* of the country, which so quickly responds to the voice of *particular classes*.

CHEESE DAIRIES IN VIRGINIA.

MAJOR STEVENSON'S RECIPE FOR MAKING WELSH RAREBIT.

ARE you, Mr. Editor, sufficiently observant of the *progress* of the arts to know that the art of manufacturing *cheese* is traveling southward close on the tail of *the red fox*? The latter has but very lately crossed the line from the Old Dominion into the old North State, somewhere about Milton, and the former has been yet more recently established in the mountains of Virginia.

Doctor P. THORNTON, whose ideas of what may be useful and feasible have been observed to march in advance of his neighbors, has lately procured, from the North, a very respectable and intelligent person, acquainted with the business, to establish a cheese dairy at MONTPELIER, a most delightful residence, as its name imports, situate in a charming valley between the mountains of Rappahannock; and most excellent, I can truly say, are the specimens I have seen and tasted from the Montpelier dairy—far more palatable to my taste, than much of the dry, husky, so-called old English cheese they give us at many of the hotels. The color is of the right cast, while in richness and flavor it is all that could be wished, unless it be that, perhaps, for want of age, it may not have reached that *haut goût*, or attained that degree of *active liveliness* which the more pampered and delicate palate of the epicure might demand. We have heard, also, of other movements for the establishment of *cheeseries*, far back from tide water in Virginia; nor does there seem to be any good reason why they should not be reasonably profitable—I say reasonably, because we are all for making money too fast. It is time we had learned—for we shall have to learn that they are fortunate who by the utmost diligence and economy can support their families decently and make both ends meet; nor can that be done in many cases, unless all—yes, all—who *consume*, are made to *produce*.

In the mountains and valleys far back from tide-water, and to and from which transportation is expensive, they have the grass in summer and the fodder and corn in winter too distant to be sent to market, and more profitably convertible

into cheese than butter, because it is easier to accomplish in its manufacture a certain degree of excellence. The quality of cheese is more likely to be uniform than that of butter, while it is more easily preserved, more conveniently transported, more salable in neighborhoods distant from tide-water cities, and more exchangeable for articles which will bear keeping until they can be sent thither for sale. Those who, like Doctor T., pioneer in all reasonable enterprises to establish new branches of industry, are entitled to the thanks of all to whose benefits the results may enure; and even though such enterprises may sometimes fail, those who project them have a right to enjoy the self-satisfying reflection that if they have not succeeded, they have done more: they have deserved success. Who has not observed that he who is destitute of all spirit to try new things is among the first, when anything fails, to exclaim, "*Ah, I told you so!*" "*I knew it!*" Were the world regulated by such men, sheep-shears would never have been invented, and we should see these wise men, who can foresee everything, after it happens, still plucking the wool from their sheep, as old women pluck the feathers from their geese, *by the roots!* What is wanting, Mr. Editor, on the part of American agriculturists, as you have said, to diversify their staples and to make more out of their means, is, more reading, more inquiry, more reflection, and more enterprise—more energy, in a word, to *do!* to *try* and to have less of what they call "a great mind" to do so and so, which usually ends in a little greater mind to do nothing. But, returning to the manufacture of cheese, one is naturally led to think of *cows*, and, in that connection, to remark, that the accumulated evidence in favor of the truth of M. GUENON's theory about the marks that indicate good and bad cows, makes it obvious that every one, whether he be on a small or larger scale a manufacturer of cheese and butter, or whether he be an humble cotter, with but one "hawkie,"

"That 'yout the hallan snugly chows her cood,"

yielding their chief sustenance to his little family, all should be alike familiar with the marks laid down in the "*Cow Book*;" for, being guided by that, he need never own a bad milker. That little book should hang on the breast of the chimney, on the same nail with the Almanac.

RUSTICUS.

PATERSON, N. J. December 19, 1846.

Dear Sir: I have read with great satisfaction M. GUENON's work on Milch Cows, by which one can judge by certain infallible signs the milking qualities of the animal. I have compared the marks he gives for his first grade Flanders cow, and find they correspond with the escutcheon of my favorite Devon cow *Ellen*, that has taken the first premiums at the last two Cattle-Shows of the American Institute. My farmer has great faith in M. Guenon's work, and so has one of my neighbors, a knowing Scotch milkman who keeps fifty cows. He says that after careful examination he places confidence in these marks, and they will govern him in his future purchases.

I return you my sincere thanks for giving to us farmers this valuable treatise of M. Guenon. I shall hereafter make my selection of the calves I will raise from my choice stocks from the marks given by this author. I think every farmer should own this work.

With regard, yours, &c.

ROSWELL L. COLT.

To the Editor of the Farmers' Library.

Apropos to Cheese.... RECIPE FOR WELSH RAREBIT, from Maj. SAM. STEVENS, *Shades Hotel, Thames-street, New-York City*—the highest authority and the head-quarters in all the United States for Ale and Welsh Rarebit:

'Presented by Maj. STEVENS, with his most respectful compliments, to Mr. SKINNER, Assistant Post-master General, and in conformity with his promise. May good digestion wait on appetite. New-York, January 28, 1845."

Select the finest *new* cheese you can procure; chop it very fine; put at least a quarter of a pound into an iron or tin sauce-pan; add a little beer or water; stir it over the fire until perfectly dissolved; have your slice of toast on a warm plate ready to receive it; pour it over the toast, and serve it up immediately. Use for dressing, mustard, pepper, and salt, as you like it. The above furnishes a Welsh Rarebit for a single person.

SOFTENING DEW AND WATER-ROTTED HEMP.

INQUIRY BY A MANUFACTURER.

PATERSON. Jan. 6, 1847.

Dear Sir: I wanted to see your new books and talk farming; but more especially to ask you to make inquiry of some of your *Kentucky* friends as to the process they have in practice there for softening Dew and Water-rotted Hemp, to render it as soft as Flax. They do this here, and in Scotland, but it is by a very imperfect machine and cumbrous withal. In Kentucky, I am told, they do it at little expense and less trouble. If it can be done well, it would bring this hemp into very extensive use. I have done it very successfully without the aid of a machine; but a gentleman from Kentucky, visiting me, assured me it was done better, with less trouble and expense, in that State.

If you should get any information regarding it, I hope it will be of such a character as to avail of the process without farther inquiry. If it be a machine, let us have a drawing; if a chemical agent, let us know what it is that is to be applied to produce the desired effect.

Very many happy New-Years to you from yours, truly,
J. S. SKINNER, Esq.

JOHN TRAVERS.

We hope the above will fall under the eye of Mr. Anderson, of Louisville, or some other gentleman of experience and public spirit, who will give us the information desired. By-the-by, we had hoped to hear again from A. before now; but were we asked, On what claim? we should be *nonplussed*, as they say in the Slashes.

THE PLOW,

AS ILLUSTRATIVE OF THE PROGRESS OF AGRICULTURAL IMPROVEMENT—OBJECTIONS TO MONEY PREMIUMS.

HAVING on various occasions alluded to the labor-saving inventions and changes in the structure of agricultural implements, and the admitted progress which is making in the knowledge of the composition and use of manures, the vast improvement in fruits and vegetables, as well as the additions to both—and to the better understanding of the principles of breeding, rearing and fattening our domestic animals, within the last half century—as arguments which should at once put to shame and disarm the opponents of “book knowledge” and of public expenditure for agricultural education, it may not be without its usefulness to go back to some facts in the history of that king of implements, the *Plow*—not back to the time, long since the discovery of America, when the hauling of the plow “by the tayle” was forbidden by act of Parliament, but to the comparatively very recent period in our own country, and even in our personal recollection, when the *wooden* mould-board and the *wrought-iron* share, gave way to *cast-iron*, against all necessity or promise of usefulness, in the opinion of those wise disciples of the stand-still school, who, time out of mind, have contended that we are already standing on the topmost round of the ladder of all useful discovery. It may be some gratification to those who entertain at least an innocent curiosity to be instructed in the *history* of Agriculture to see how modestly and cautiously the first use of the *cast-iron share* was announced; and yet how short was it of the superb cast-iron plows now produced at all our great manufactories of agricultural implements!

In the “Transactions of the Society for the Promotion of Agriculture, Arts and Manufactures,” so highly honorable in its origin and proceedings to the LIVINGSTONS, the L'HOMMEDIEUX, the MITCHELLS and DE WITTS in those palmy days (533).....26

of the Republic, Col. JOHN SMITH communicated to the Society that in the last spring and summer he had used "the cast plow-share which had been exhibited to the Society at their meeting during the last session of the Legislature, and found it to exceed his most sanguine expectations." "It is," said he, "cast in the form of a Dutch share, after the best model that could be procured by the Society, with this exception, that the edge is not complete, and not so wide, by about three inches, as it will be when finished with the false edge, which is made of wrought iron or steel, and fastened on with rivets. The soil in which I used this share was light and free from stone, though I *believe*, with *careful* usage, it will answer in any other soil, although the same may be stony and incumbered with stumps. This plow-share, besides answering every purpose of those made of wrought-iron, will last to plow as much as two of the latter before it is worn out, the cast-iron being nearly as durable as steel before it is hardened. By this experiment it is very obvious that the cast plow-share will be very beneficial to farmers, and ought to be encouraged by this Society. They may be had of Mr. Peter T. Curtenius, in New-York, either with or without the edge, which is made of wrought-iron or steel." Thus might we dwell, could we believe it necessary, on the invention, within the period designated of *Pennock's horse-rake*, on improved *threshing-machines*, and *cutting-boxes*, and *corn-shellers*; and though last, far from being the least, on the modern mowing-machines of Hussey and Hotchkiss and others, to show not only that the course of agricultural improvement has been progressive, but that the rate of its progress has been just in proportion as its wants have engaged the attention of ingenious minds, and even in spite of those denouncers of all book knowledge and all application of science to the subject—your wise men, only in their own conceit, who ever hang like dead weights on the wheels of useful discovery, and whose counsels would have still kept us in the use of the *hand-gin*, the *wooden plow*, and the *truck-wheel*, "when it required two yoke of oxen and a horse to speed the plow, and tin horns and sleigh-bells to stop the speed of bees going off to swarm." Our agricultural annals show still greater improvement since that time in this important implement, the plow, than was characterized by the change from the wooden to the iron mould-board, until now, even the most sanguine may be excused for doubting whether we have not reached the highest attainable degree of perfection. Take, for illustration, the following extract from the Report of F. W. Gale, Esq., on Agricultural Implements at the Worcester (Mass.) Show, in the autumn of 1845:

The Committee commence by saying that they believe this department, of mechanic tools and agricultural implements, affords facilities for farmers and mechanics to obtain a knowledge of the various new and useful tools and implements which science [mark you, reader, science,] and active invention are constantly supplying, that cannot, generally, be obtained in any other way. And then they proceed to observe, in respect to the show of plows: Messrs. Ruggles, Nourse & Mason contributed their usual quota toward the exhibition. *Twenty-nine varieties of plows*, a corn-sheller, a vegetable-cutter, an improved barrow and a well-made road-scraper were sent in by them. It seems almost incredible that so many kinds of plows can be necessary for all soils and situations. But your Committee do not hesitate to say that, in their opinion, the *peculiar and dis-*

tinative merits of each are visible upon trial and explanation. Many of the improvements upon the old-fashioned plows, which these gentlemen have introduced and adopted, are already so much in vogue as to be known to all farmers; while others of later date have become known to only a portion of the agricultural interest. It seems to us that the farmer neglects his own real interest in neglecting to understand the peculiar utility of most of these improvements. An improved form of the mould-board, by which the soil is turned more easily and with less exertion to the hand than formerly, commended itself to the attention of all. The draft-rod upon plows of recent introduction, also those of meadow fixtures, used in reclaiming meadows, and capable of being removed, and the same plow used for upland plowing, deserve particular notice. The

chilted share and land-side manufactured by them are decided improvements over most plows now in use. A wheel at the forward end of the cultivator, has been recently added by them and greatly facilitates turning, regulates the depth, and steadies the movement of the implement. Their subsoil-plow, made upon precisely the same principle as one imported by them from Scotland, in 1840, has been simplified in construction, and reduced in cost from fifty dollars in Scotland to fifteen dollars in Massachusetts, of corresponding size. For this they deserve the thanks of every farmer. Every real improvement in any agricultural implement may be said, in one sense, to be

an additional pair of hands, or at least an extra brace of muscles, to the farmer, which he gets without paying them extra wages. In this view, too much encouragement cannot be given to those who are seeking to improve and perfect every kind of implement which the husbandman employs. Messrs. Ruggles, Nourse & Mason have for years exercised an indefatigable zeal and perseverance in this behalf, and have been rewarded with great success.

Your Committee recommend that a gratuity of *ten dollars* be given them, as a trifling though inadequate proof of the Society's appreciation of their indisputable skill and constant exertions to improve upon the past.*

And if so much has been realized, in spite of popular prejudice and pusillanimity, and in the absence even of all demand on the part of the landed interest for Government provision for *civil* as well as *warlike* education, who shall say what

* We cannot forbear the opportunity once more to suggest whether it would not at once indicate and help to form a better taste, were Societies to give their tokens of approbation in almost *any other shape* than that of *money*: There seems to be in a V. or an X. dollar note something so mercenary, so sordid, so incompatible in its very appearance and uses, with the fine sentiment of pride and love of distinction which premiums are, or should be, intended to promote, that really we could never bring ourselves to comprehend how it is that the distribution of these trifling sums, down as low even as one dollar—and that even to matronly housewives and young ladies, for beautiful samples of female ingenuity and industry—should be continued among refined people. What, for instance, is a *ten dollar note* to the proprietors of a great manufactory of agricultural implements? Yet even they might value something, the merest trifle, which could be exhibited to their friends and transmitted to their children, as a visible trophy won by their own ingenuity and public spirit. Much sooner, we presume, would Messrs. R. N. & M. have *given* the worth of the X. in some improved implement, selected by the Society to be labeled with its approbation, and placed in some public museum or repository of useful inventions. It is not the gross passion for money, the *auri sacra fames*, to which Societies desire to appeal in these cases: and if they did, such trifling reward would be inadequate—for that and the mere record of approbation itself would answer as well. How much more appropriate would have been, in a case like this, some small piece of plate, with a suitable inscription, or some agricultural work, or work on mechanics, or the biography of some distinguished mechanician, a Memoir of Sir JOHN SINCLAIR, the great promoter of Agriculture, or of WATT, or ARKWRIGHT, or FRANKLIN, the printer, or PRATT, the tanner, or BURRITT, the learned blacksmith, or a copy of RANSOME's work on the PLOW, or any agricultural periodical, as the Cultivator, the Agriculturist, the Farmers' Cabinet, the American Farmer—something, however trifling in cost, with an appropriate and enduring expression of the Society's approval of their ingenuity and enterprise—in short, anything but a *little money*! Even under the supposition that there exists in any community, which we can hardly believe, a feeling of preference for *l'argent*, on such occasions, over any other even less costly tokens of approval, the coarseness of such a taste ought not, by a Society, to be presumed or recognized, as we humbly think, much less encouraged. Education, the ennobling and salutary thirst for honorable distinction, can hardly be said to have effect where, for instance, a silver pen, with a gold blade, such as that which is doing this sad specimen of chirography, and presented by a fair lady, would not be far more valued than a V. note, even though the former cost but \$2 50, while the latter would, in the open market, command 100 wt. of "pickled pork!" Well are we aware that such notions are not what are called "*practical*:" still we believe that in the long run the highest practical results are to be realized, by appealing to the highest and most elevated motives of action. Our notion may be "diseased," as Tom Tough says in the song; but if so, "it's a disease we shall die un." What we have ventured to suggest was not designed for this case in particular. The occasion has been used to say, in the way of a note here, what might as well, and perhaps better, have been set forth in a separate article; but we thought it as well to "*strike while the iron is hot*."

The above reasoning does not apply to the premiums of one, two, or three hundred dollars, offered, as they should be, for elaborate, scientific, and really original and valuable essays, which demand great labor and research, and which necessarily occupy much of that time which their authors are forced to dedicate to the, after all, inadequate support of their families. In such cases, the successful author may be said to be employed in the line of his profession, and though the honor of winning the prize constitutes a large part of its value in such cases, yet something else must be had, to use a common but significant expression, "to make the pot boil."

Societies that find it difficult to get subscribers at \$3 (or even, as we have known in some cases, at 50 cents) a year, think nothing of calling on a man who has nothing but mental labor to depend on, to furnish them with an essay or an address, involving as much labor as, in the way of business, a lawyer would expect to be rewarded with at least a \$100 note.

Ed. Farm. Lib.

improvements and what amount of knowledge might not have been realized for Agriculture under the same favor of public opinion and equal expenditures of Government, which have served to promote the growth and spread of knowledge in respect of all other pursuits, and more especially of that one whose aim is to kill the greatest number at the greatest distance, and with the greatest economy of time and materials ! For is it not one of the greatest problems of the day and the Government whether *cotton* may not be employed to destroy the human race at less expense than *saltpetre and brimstone* ?

CISTERNS.

We are glad to lay our hands once more on the following. We lately said that no one need want good drinking water who had roofs to their houses. These cisterns afford the best sort of drinking water, when iced ; and the quantity is surprising which the roof of a dwelling house will supply. Here is proof that no one need want a supply of water in his kitchen, and in his chamber for washing and bathing, at a comparatively small expense.

We lately saw a cistern at Mr. Buck's in Hartford, Connecticut, which, we understood, was made altogether of cement without any brick ; but what Doctor Jones has done, assurance may be felt is thoroughly well done—he has that *old English way with him*.


J. S. SKINNER, Esq.

WASHINGTON, Sept. 16th, 1843.

Dear Sir : I send you the following items respecting the dimensions, structure and cost of my rain-water cistern. It was dug 7 feet in diameter, and 10 feet deep, is paved with hard brick, laid in hydraulic cement ; is walled up with a 4-inch wall, well bedded in hydraulic cement ; a thin grout of the same was poured in between the bricks and the ground, every four courses, so as to leave no interstices. A perfect coat of cement is plastered over the whole interior.—The top is formed of two flag stones, making a square of 7 feet. This is less costly than a crown of brick-work, and takes nothing from the interior of the cistern. One of the stones is perforated to admit a pump, and the opening constitutes a man-hole, when it is desired to clean out the cistern.

The following is the cost :

| | | | |
|--------------------------------------|---------|---|---------|
| Digging..... | \$ 8 00 | Bricklayer's Bill..... | \$16 68 |
| Brick, (hard) 1800 at \$7 per M..... | 12 60 | Flagging for top \$15; cutting hole \$1.. | 16 00 |
| 4½ bbls. of Cement at \$2..... | 9 00 | Total..... | \$63 28 |

I admit the water through a cast iron pipe, about a foot below the top, but a tin pipe passing through the flagging would answer perfectly well. An opening the size of a half brick is left below the flagging, to discharge the waste, and this is closed by a gate to keep out insects, &c. thus: 

A cistern of this size will contain about 1900 gallons, or 35 hog-heads at 54 gallons to the hog-head. Each foot in depth contains 190 galls. or 3½ hhd. the diameter being 6 feet 3 inches in the clear. One of 8 feet in the clear would contain about 312 galls. or 5 4-5th hhd. for every foot in depth. Should greater capacity be required, make it deeper but no larger in diameter.

A pump and lead pipe will cost about \$12.

I shall use two pumps, one in the yard and one in the kitchen ; the latter will be a force-pump, to raise the water into a bath room in the third story of my back building.

Any other particulars which I can furnish will be cheerfully communicated by

Yours truly,

THOS. P. JONES.

TO PREVENT HARES AND RABBITS FROM BARKING TREES.—Mix soot and milk until the mixture acquires the consistency of thick paint, and apply it with a paint brush, choosing a dry day, if possible, for the operation : once a year is sufficient.

DIBBLING WHEAT.

WITH INTERESTING REMARKS ON THE CHANGE IN THE CHARACTER OF WHEAT SINCE THE FIRST NOTICE OF IT IN THE DIVINE RECORDS.—OREGON CORN.—
ENGLISH AND AMERICAN EXPERIMENTS.

Its character since its first notice seems to have changed. In the Divine records we are told of "seven ears" coming up "in one stalk, full and good;"* and this appears to account readily for that and the adjoining countries bringing forth such tremendous produce as "an hundred fold," or at the rate of two bushels seed per acre—a produce of 25 quarts to the acre!

Now, however, we never see more than one ear spring from one stalk; our climate seems to have the unaccountable tendency to diminish the number of ears to one, while in Egypt six or seven ears are not uncommon occurrence. The wheat plant appears to possess a wonderful power of reproduction under favorable circumstances; and the capability to form ears out of stems seems in this country to be developed in producing stems from one root. The writer has in his possession at this moment a root of wheat of the creeping red variety, which was given to him by Colonel H. Croft, of Stillington, in Yorkshire, which has seventy-two stems from it, full and vigorous as is possible to conceive. It is another extraordinary property of the wheat plant that it possesses, polypli-like, the power

of being subdivided in an almost infinite degree. Mr. Lance, of Lewisham, obtained by transplantation in some roots, 40 to 50 stems, with ears from six to seven inches long, and in one instance obtained actually the extraordinary number of 190 ears. Mr. Miller, of Cambridge, produced from one grain of corn $3\frac{1}{2}$ pecks, or nearly one bushel. Mr. Fulla, of Newcastle, in an experiment on sowing wheat, gives the following comparative results:

| | |
|--|--------------------|
| No. 1, transplanted into 6-inch lines, | 62½ bush per acre. |
| No. 2, 9 .. | 56½ |
| No. 3, 12 .. | 61 |
| No. 4, drilled .. 12 .. | 65½ |
| No. 5, broadcast, | 58 |

The above are given by no means as advocating or recommending the practice. It is evidently illusory as regards a farmer attempting it; and doubtless the situation was such, when the trials were made, as no farmer could possibly have, except perhaps on the remains of a celery or cucumber bed; but it proves the amazing capabilities of the wheat plant to reproduce its kind, with a degree of fecundity equaled only by its utility to man kind.

R. L. COLT, Esq., at Paterson, in the autumn of 1845, dibbled 1 quart of wheat on less than a tenth of an acre; and, though much of it was blown down by a heavy storm, and much depredation was committed by his poultry, which are of all imaginable kinds, he cut and threshed 156 quarts of beautiful wheat. He has put in an acre this year on the same plan, and promises to give us the result.

He has this year reared some Oregon corn, generally upward of 12 feet high. On one stalk, without selection, he had 4 ears of 24 rows each, and 1200 grains to the ear. Here, then, is the astonishing production of 4,080 for 1; but Mr. C. thinks this species of corn will not answer for this northern region.

Mr. Colt is one of the few (for the public it might be better if there were more of them) who, being able, farms for his own amusement, and to see, not how much money can be made—for that is not a "part of his sastim," as O'Toole says—but to see what may be done or introduced, that may be useful and turned to account, by economical and practical men, for the general good of the country. Would that all men of means were actuated by the same enlarged and generous views! and that their whims or fancies would in a greater number of instances take the same bent in favor of Agriculture and Horticulture! Even their failures, when they try experiments, are more useful than the successes of churls who hide their lights under a bushel. A lump of selfishness may make a suc-

* Genesis, ch. xli., v. 22.

cessful voyage : and the proverb says, "a fool for luck ;" but there 's no mistaking the motives of him *who plants buoys*.

We have lately looked with pleasure at Mr. Colt's immense heaps of manure, in which it would be hard to say what *there is not* ! Old shoes and hats ; dead cats, and dogs, and horses ; bones, and rubbish of all sorts from the streets ; the mortar from old houses repaired ; and all the night-soil of a town of 12,000 population, well to live, which, with some plaster of Paris, is converted into poudrette. To all these are added charcoal dust of several foundries, which he gets for the cartage ; to these, again, large quantities of anthracite ashes, on same terms, and then the waste of two large paper-mills, with the liquor from the bleaching of the same. Thus, it is easy to imagine, will his lands soon be restored, which had been exhausted by the old Dutch system of "always taking out of the meal-tub, and never putting in ;" and, where that will soon come to, Poor Richard has told us ; and he who does not take heed, sooner or later will be rapped over the knuckles or—*tapped on the shoulder* !

MIGRATION FROM NEW-YORK TO VIRGINIA.

The following is from a gentleman of superior worth and intelligence, known to the Editor of THE FARMERS' LIBRARY. It has not been long since he removed from Albany, where he was generally known and as generally deservedly esteemed.

[We were compelled to decline the invitation ; in the meantime had said about all that is necessary on the subject of FARMERS' CLUBS. We have propounded various questions to the Club, through our correspondent, and doubt not that the more detailed information we shall receive will be worthy of communication.]

J. S. SKINNER, Esq.

LAKE BORGNE PLACE, Prospect Hill, Fairfax Co. Va. Dec. 14, 1846.

Dear Sir : Before this reaches you by due course of mail, you will have seen our mutual and excellent friend, and my most valued and esteemed neighbor, Com. JONES, who will have communicated to you our desire and most earnest request for an Address from you on the occasion of the organization of our "Farmers' Association" at this place early in January. I trust you will find it convenient to spend a few days with us : as well for this purpose, which I know you have at heart—the improvement of our Agriculture by means of associated intellect—as for conferring on us the pleasure of your society, and enabling us to extend such hospitality as may be in our power to one so highly esteemed and regarded as yourself.

You will perceive by the *nom de guerre* which I have given to my future farm, that I am not unmindful of the gallant services which Com. Jones rendered to his country in time of peril, in the famous naval action near Lake Borgne, in the vicinity of New-Orleans, a few days only preceding the great battle of the 8th Jan. 1815. Having purchased some eighty acres, part of and adjoining his extensive and well cultivated estate, I deemed it a fitting mark of respect to give to it an appellation which should at least testify my appreciation of his character and services, if it accomplished no more permanent object.

I am, thus far, well satisfied with my position and prospects in this delightful portion of Virginia. The climate is exceedingly mild and agreeable ; the society, in all respects, pleasant ; and the soil—that portion of it, at least, which has come under my observation—rich and fertile, requiring only a moderate degree of industry, and a judicious application of capital, to render it fully equal to the most profitable soils of New-York. Much of it, it is true, has been inconsiderately exhausted by its former proprietors and left to "waste its sweetness on the desert air," but it is easily susceptible of reclamation ; and there are hundreds and thousands of acres in this single county, within from five to twenty miles of one of the best markets in the United States, which may be obtained at prices

varying from \$5 to \$10 and \$15 per acre, which, with two or three years of systematic culture, may be made worth from \$30 to \$10. The farm directly opposite my own, consisting of two hundred acres and having on it a large and well built two-story brick house, which alone cost the original owner \$7,000, was purchased two years since by Mr. Sherman, (an intelligent and enterprising farmer from Connecticut,) for \$5,200, or \$26 per acre—and he has repeatedly refused \$10,000 for it, a sum which he might command at any day he chose! I shall be very much surprised if lands of this description and quality are much longer suffered by Northern enterprise and skill to go a-begging for five, ten and fifteen dollars an acre. Quite a colony of immigrants—chiefly from the banks of the Hudson and Western New-York—have already taken up their abode in this vicinity; and a large amount of capital has been profitably invested in the cultivation and improvement of the rich soils thus taken up.

A few days since a colony of Quakers from Pennsylvania—a class of shrewd, intelligent, enterprising and industrious men, to say nothing of their well known religious principles, so eminently conducive to order, quietude and peace—purchased some three or four thousand acres near Mount Vernon, in this county, and I understand, intend occupying them at once. In short, I know of no investment which in my humble judgment—and in this respect you can correct me, if I speak unadvisedly—is capable of affording a more certain and compensating return, within, comparatively speaking, a brief period, as the purchase by an enterprising, industrious, practical Northern or Eastern farmer of a hundred or two acres of what are generally termed the *exhausted* lands of this portion of Virginia.

Since I have been here I have received numerous letters of inquiry as to the capacity, productiveness, resources, &c. &c. of these lands. My limited acquaintance with the surrounding localities and characteristic features of the soil, will not as yet permit me to speak, except in general terms, upon those points of greatest interest to inquirers: but I feel authorized, from what I have seen, to invite the closest and most rigid examination not only as to the susceptibilities of the soil, but the healthiness and salubrity of the climate, the advantages for disposing of the surplus produce of the farmer, and the general excellence of the society. To its genial breezes and sunshine I feel indebted, under Providence, for a complete restoration of health and strength, within the short space of two and a half months; and I do not know that I can more appropriately testify my gratitude for this blessing than by devoting myself henceforth, as it is my intention to do, to the practical culture of its noble soil.

Truly yours,

S. S. RANDALL.

CUBA TOBACCO.—R. ADAMS, Esq., of Virginia, has received through General Campbell, our Consul at Havana, a bottle of the seed of the far-famed Havana Tobacco, which he proposes to cultivate and to distribute in Virginia. All such enterprises are worthy of being noted, if only historically; but we have little expectation that in Virginia, except it may be in some warm, light land in the south part of it, the tobacco will retain its flavor in any remarkable degree after the first year.

In Maryland, the fine odor is strongly perceptible in the first crop, but in the third it is lost. We can see no reason why the culture of this sort of tobacco and the manufacture of cigars, should not be very profitable in Florida, if the seed were imported, as they might be, every year—protected as the article is by a high duty.

If Madder and some other things were protected in like manner, they might be produced with remunerating returns in our country.

We shall hunt up, for republication, an article of General Hernandez, of Florida, on the culture of Cuba tobacco.

By a friend in Natchez, we were furnished with a translation of a Spanish Essay on the subject, but the fact is that, in all modes and manners of cultivation they lag so far in the rear of us that, except perhaps in the handling, we could make nothing out of it.

PENNSYLVANIA FARMING

RECOMMENDED TO BE PRACTICED IN MARYLAND, NATURALLY A BETTER WHEAT COUNTRY.

THE following letter was written by a plain, practical, working Farmer, giving his views in plain terms—as one neighbor does to another—without any view of appearing in print. It need not be read with the less attention or profit, on that account. We are sorry to understand that farming is not improving as generally as might be wished, in a region so blessed by Nature with a rich and enduring soil and pure healthy atmosphere. If she does not keep pace with other sections, *query*, is it that her inhabitants despise book-knowledge; or is it, as some would contend, that they *read too much* of what is going on in the wide world of Agriculture? On reading, we solicited the favor of being allowed to publish it. If there be in it nothing absolutely new, there is that which cannot well be too often repeated.

UTICA, January 29, 1847.

Dear Sir: In my last letter I mentioned something relative to the improvement of land in Lancaster county. I am fully convinced that, if a proper and judicious mode of improving land was introduced into *Frederick county*, that in the course of six or eight years it would produce double to what it does at this time. I consider that part of this county, where I am acquainted, a *much better wheat-land than that of Lancaster county*, and, under similar cultivation, would bring *more wheat to the acre*. I would not dare to say that every farm would bring double. No doubt there are many good farmers here, as well as there; yet, I must say, I have been unfortunate in not meeting with many of that kind.

The most of all the farms within my knowledge both in the limestone, as well as the red-lands, have become deteriorated and inert from the circumstance of a wrong mode of farming. A uniform mode of shallow-plowing, say from five to seven inches deep—and that almost continually under the plow—with now and then a little starved crop of clover, and often the cattle turned on before it is six inches high: is it any wonder that these complaints are heard about bad crops? Nothing is a more convincing proof to me that plants derive a great deal of their nourishment from the air, seeing the crops, and considering the manner of cultivation. All land that has a good subsoil and what is generally called loam, is susceptible of improvement: and the only time it can be made available is late in the fall, after the subsoil has become saturated with the fall rains, the wetter the better. There ought, by all means, to be a heavy coat of something to turn down. The plowing must be a foot deep. Three inches or four of the subsoil which lies under seven inches, if well applied, would soon pay the State debt. What a pity to have so much hidden treasure unemployed and unproductive! When the genial rays of the sun spread a benign influence around in the spring season, causing man and beast and bird to rejoice, vegetation also rears its head to praise its Maker. This is the time also to prepare food, first for plants, and afterward for man and beast. Fermentation and decomposition then take place.

I would now say something about the deep-plowing: A considerable quantity of the five inches of subsoil turned up last fall, and frozen last winter, will now become available for the food of plants: amelioration takes place, it becomes friable and moulders down, becomes commingled with the topsoil, undergoes now a state of fermentation—a kind of chemical process; and here is also going on, at the same time, the decomposition of the vegetable matter turned under in the fall. Here is a fine range for the corn-roots to seek their supply—instead of six or seven inches, here are twelve. Here is a place to hide the roots from the sun, and here is a little cistern to hold water when there is a little to spare, to be drawn up by the rays of the sun when wanted.

As we have got through with the fresh start for improving the land—especially if it is possible, before planting the corn, to put a little manure on, as also fifty

bushels of lime to the acre—(this would be doing the thing right)—we will now leave you with this advice: Work the corn well early; be sure to have no work to do in it after it becomes a foot high. The next crop to be put in is wheat, the next summer. Commence plowing in May, harrow in June, plow in July, harrow in August, plow the third and last time the first week in September, and sow about the middle of the month. As soon as you have finished harrowing the wheat, sow to each acre eight quarts of timothy seed; then on with your roller, and roll all down smooth.

Then in the spring, to every six acres, one bushel of clover-seed. The next summer there must be *no stock put on before the first of July*, and be sure none the fall before except a few hogs, if they do not root, after the wheat is off. The next summer, mow the first crop about the first of July; and let the second crop stand, to be turned under as before, a foot deep. Now you have got one once through. This plan may be altered and changed to suit circumstances, as may be required. If wished, it may be put in *rye* after the wheat; or it might remain three years in grass. The field might be put in wheat the same fall, by cutting off the corn, but the grass will never succeed so well, and, therefore, I would never advise that plan. It is *large crops of grass* that will improve the land cheaper and faster than any other mode of improvement.

As I have spun out a pretty long yarn already, I will soon come to a close, after saying something about the subsoil and deep-plowing. If the land is light and dry, and the subsoil-land is open and porous, pervious to water, with a large proportion of sand, such land might be plowed a foot deep in the spring for corn. The fall, however, is the proper time for all subsoil-plowing, and no other time will answer for land when the subsoil is of a hard, stiff clay. The frost is the only and proper agent to commence the work of deepening the soil.

I really feel as if the boy was making an attempt to instruct the master. Well, if it should be so, I know you will attribute my saying what I have said to a pure intention.

To conclude the whole matter, a deep rich soil is indispensable, if you want good crops. Now, the great point is, let every farmer go to work. Let him not only work, but *read and study*; and the man that shall find out the most judicious plan of deepening and improving the soil, let him have a great monument raised to his memory. I am sure he would be more deserving *than if he had killed a thousand Mexicans*.

I see you are doing something on the subject of Agricultural Chemistry. I hope it will meet with favor; the subject ought to be introduced and encouraged everywhere.

Respectfully,

WM. TODD.

N. B. If I should have the pleasure of seeing you, I will then tell you the kind of a plow necessary to plow a foot deep, and many other things that may be entertaining.

To Hon. D. W. NAILL, Senator, Annapolis.

TO CORRESPONDENTS—ONE AND ALL.

THERE are many communications on hand that we should gladly have given in this number, if there had been space at our command. The necessity of going from home compelled us to supply the matter for this number earlier than usual. A short excursion in "Little Delaware" has confirmed our impression, that in Agriculture she is moving with a *go-a-head-ativeness* that will place her much in advance of some of her larger sisters. As to her *hospitality*, nothing need be said. The "OLD BLUE HEN" treats all sojourners within her borders as kindly as if they were her own chickens. We traveled within her limits nearly 100 miles, and though the purse was sometimes brought forth, it was never allowed to be opened—*openly*.

YEAST CAKES.—Any good liquid yeast will make good *cake yeast*, by working corn meal in it until it becomes stiff; let it set until it begins to rise a little; make it out in cakes, and dry it in the shade.

VEGETABLE FOOD.

VALUE OF THE INORGANIC INGREDIENTS OF VEGETABLE FOOD, AND PARTICULARLY OF THE PHOSPHATES.

To read the following, would, one would think, be sufficient, if anything were needed, to show the practical applicability of science to Agriculture, and the criminal supineness of agricultural communities in not providing for a stronger infusion of agricultural knowledge in the courses of instruction adopted in our country schools for the rising generation of American agriculturists.

How sincerely do we lament that the writer, and the few others our country can boast of like him, accomplished and capable, to exemplify the connection between science and field practice, have so little leisure to favor us in this way. It is, however, a matter for congratulation that the barriers which have separated theory from practice in the art of cultivation, are every day giving way, and the time fast coming when the practical farmer will solicit the good offices of the animal and vegetable chemist, inviting him to walk with him to his stercorary and his fields, as the surest means of securing for his vocation both respect and profit.

To the Editor of The Farmers' Library :

My Dear Sir : In page 6 of Mr. E. N. HORSFORD's Essay on the Nitrogenous Ingredients of Vegetable Food, is the following passage :

"The various forms of food derived from grains, herbage and roots furnish—

- 1st. Bodies containing nitrogen ;
- 2d. Bodies destitute of nitrogen ;
- 3d. Inorganic salts—

all of which are serviceable in the animal economy. The nitrogenous bodies, from their solution in the blood, form the tissues, the actual organism. The bodies wanting nitrogen contribute, by their more or less perfect combustion, to the warmth of the animal body ; and the salts of the alkalis and alkaline earths (the inorganic salts) serve to build up the osseous framework, besides constituting an essential part of every organ of the animal system. Their values for the latter purpose are in proportion to the *phosphates* their ashes contain."

Hence will be seen the value of the inorganic ingredients of vegetable food, and particularly of the phosphates.

Mr. Horsford also states that the difference of the nitrogenous ingredients in different analyses of the same kind of grain probably arises from a difference in the soils in which the samples analyzed were grown. That the differences in the inorganic ingredients of the same kind of grain shown by the various analyses of the best chemists arise from the same cause cannot be doubted, and notoriously in the phosphates ; for we find that when a soil is exhausted of this valuable ingredient, all the nitrogenous manure in the world, without phosphates, will not produce the cereal grains.

I will add, that in feeding young animals whose bones and muscles have yet to grow and enlarge, the importance of a liberal supply of phosphates in their food is too evident to admit of a doubt.

The phosphates, then, being clearly next in nutritive value to the nitrogen, it becomes a subject of the highest interest for the agriculturist to discover by what means, or if at all, he can increase the quantity of these ingredients in the grain and roots on which he feeds his stock.

This question has not yet been opened by the scientific agriculturists of Europe, and it is one the true solution of which of right belongs to the Public Model Farm and the Agricultural College ; for it combines and links together experiment on the manure and, through the food, on the animal, the Alpha and Omega of Agriculture.

I have already stated in various publications, that analyses, made at my instigation, of Indian corn grown with guano, which contains the phosphates in the fittest state for immediate assimilation by the plow, show about 30 per cent.

more of this ingredient than the same grain grown on the same spot of ground with common barn-yard manure. Accounts from Europe show also that experiments with bones treated with sulphuric acid according to the recipes given, by which the phosphates are rendered soluble and therefore more immediately available to the plant than in bone-dust alone, have resulted in most surprising crops of fine and full-looking grain.

But the experiment has not yet been carried forward there by contrasting the fattening of stock with this grain, and with that grown under the influence of common manure. Nor have they yet continued it by contrasting the quantity of the phosphates in the grain of one year's growth, with that in the grain arising from this same seed sown the second and third years. It is far from improbable that treatment with superphosphate of lime (bones and sulphuric acid), or with guano, may, to a certain extent, add something each season to these valuable ingredients of food. This consequence theory shows to be of vast importance. With respect to the practical proof of this theory by the fattening of animals, I can only state that a few experiments made here with roots grown on guano soil have been attended with great success; much more, however, remains to be done before its value can be fully estimated.

What effect may be produced by such phosphated food on the milk, the butter, the flavor and quality of the meat, or the strength of bone and muscle, of course I cannot answer. My opinion is favorable toward the experiment, and the chief object of this communication is to call the attention of agriculturists to the subject in order that these experiments may be made carefully the ensuing spring.

With respect, yours,

J. E. TESCHEMACHER.

Boston, 12th Feb., 1847.

BARNs.

PLAN AND DISSERTATION ON THE BEST SORT OF BARN UNDER GIVEN CIRCUMSTANCES.

J. S. SKINNER, Esq.

CHARLESTOWN, Jefferson Co. Va., Jan. 4, 1847.

Dear Sir: In this day of improvement and investigation, I hope it will not be thought amiss to ask the favor of you to solicit a strict comparison between the different kinds of barns—embracing the items of cost, convenience and utility; viewed as a house for stock and shelter for grain, hay, straw, &c. &c. Some prefer the four-sided barn, with stabling beneath, having but one front; others the eight-faced barn, with stabling beneath, with a door and distinct yard to each or at least to seven fronts, thereby being able to keep separate as many different kinds of stock.

It is urged in favor of the four-sided barn, that it is more simple in construction, particularly in the roof, and consequently cheaper, and that it can be extended to any required size by adding to its length. This is conceded; but the object in view is to ascertain whether an eight-faced barn cannot be built of a size sufficient to accommodate 8 horses and 8 cows, 40 hogs, 2 or 3 colts, and as many calves, and still retaining an area (circular), in the center, of 30 or 35 feet in diameter, to hold the various kinds of food for the stock that occupy the surrounding stables. The next story to have a similar area in the center for threshing and cleaning grain with the surrounding space for granaries, stacking grain, &c., and also over-head, and if the building be 18 or 20 feet to the plates, would it not hold, in the straw, 1,200 or 1,500 bushels of wheat? and whether that quantity of grain can be packed away and then brought to a machine in the center as conveniently, or more so, in an eight-sided barn than in a four-sided one?

I understand both kinds are built at the North, and if some gentleman acquainted with both will favor the readers of your valuable periodical with the pros and cons, and the exact dimensions and arrangements of the most approved eight-sided barn, and also of the most approved four-sided one of equal capacity, together with the cost of each, he will confer a real favor on a community that is too apt to act without due deliberation even in the very important business of barn-building.

I am most respectfully yours, &c.

A FARMER.

And the Publishers of THE FARMERS' LIBRARY AND MONTHLY JOURNAL OF AGRICULTURE will give their two volumes, elegantly bound, as a token of thanks for the best drawing and dissertation, to meet the views of the writer.

[*Ed. Farm. Lib.*

THE GREEN TWIG PEACH.

J. S. SKINNER, Esq.

CLARKSVILLE, Va., Jan. 22, 1847.

Dear Sir: Believing any communication I can make to you to be of so little importance in itself, and so little worthy to consume even a moment of your time, I have concluded to send you, by way of remuneration for the trouble I occasion, the names of two subscribers.

You recollect, while we were traveling in Alabama last spring, you gave me a vegetable pear (or Militon), at the same time receiving my promise to communicate to you my success in propagating it. It was given to one of my daughters, who, I fear, nursed it to death. It never vegetated at all. You also recollect I promised to send you a *green twig* peach-tree; which would have been sent last fall, by some of our merchants, if it had shed its foliage. I hope to send it in the spring. The small limbs of all peach trees are *red*, except the *green twig*. If you bud it on common peach, and let each kind grow equally on the same trunk, it is a very uncommon as well as beautiful tree.

The one reserved for you is suffered to retain limbs of the common kind, to show the striking contrast. If you choose, you can lop off the red limbs, and permit the green only to grow. The bloom is different from all other kinds of peach blooms, being *perfectly white as snow*, and resembling more the bloom of the cherry than the peach tree. The fruit is cling-stone and pale yellow, large size and very delicious.

I did not intend to write more than ten lines, and beg to be excused for it, after wishing your FARMERS' LIBRARY may circulate throughout the wide expanse of these United States.

Accept my best wishes for your health and happiness.

JNO. LEWIS.

[The peach tree has been given away, in advance, to a friend, who will cherish it, and gratuitously and freely distribute its progeny.]

The vegetable spoken of was a very remarkable one, which we met with at the hospitable table of Col. Taylor, an old friend residing on the bank of the Mississippi at Point Coupée. We never saw its like before or since. It was cooked like parsnips, boiled and buttered, and makes a very acceptable addition to the list of vegetable esculents.]

NATIVE GRAPES OF TEXAS.

JOHN S. SKINNER, Esq.

BASTROP, TEXAS, October 7, 1846.

Dear Sir: . . . I take pleasure in sending you some seed of a *very superior grape*. Like the Musqueat grass, it is indigenous and peculiar to the N.W. Prairies; and, if propagated from seed and cultivated, will improve it as much as it has done the original Irish potato. The wine-bibbers of the Old Thirteen will be as much indebted to Texas for it as Great Britain is for the potato, while it will add one more link to the never-ending chain of Nature's varieties.

O. T.

P. S.—Please send some of the seed to Rev. S. WELLER, of North Carolina. He will find them preferable to the Scuppernong, which is an original production of N. C.

LONG PRESERVATION OF APPLES.—At a Horticultural Exhibition of the Carlton Cottage Gardening Society, in England, in July, 1846, there was exhibited "a specimen of apples, gathered in 1844 by Mr. Liveridge, in an excellent state of preservation."

GRAPES.

Dear Sir: I find that Gen. Dearborn joins Dr. Underhill in asserting that foreign grapes cannot be grown by open culture in this country. It is very possible that the delicate grapes of the south of Europe cannot be reared by open culture in the neighborhood of Boston, or on the sea-shore north of New-Jersey; but I have raised at my farm, as you know, Miller's Burgundy, in great perfection, in open culture; also, Muscadine grapes, in bunches of over two pounds, and Black Hamburgs weighing from half a pound to over one pound bunches; and the flavor of the Hamburgs is better than those raised under glass.

I am determined to try and raise the Fontainebleau grape, as cultivated at Thomery for the Paris market; and, if I succeed, all lovers of fine fruit will thank me.

I wish you could persuade Mr. Wetmore, our Navy Agent, to get some grape-cuttings or grape-seeds from Oregon and California. I am told he is very obliging, and desirous to benefit our country. If he will procure any kind of seeds or plants, you know I will do all in my power to propagate them, and distribute them as he shall direct.

What do you know about the native flax that grows west of the Rocky Mountains? Could we get some seed, or some of Oregon wheat, that weighs 66 lbs. to the bushel?

Ever yours,

C.

[We should be glad to be made the medium for promoting the enlightened and utilitarian views of our esteemed correspondent.]

SHEPHERDS' DOGS.—How TRAINED.—A gentleman wrote us, not long since, that he had succeeded in procuring a pair of Shepherds' Dogs, and that the slut had whelped eight fine pups.

The dog, on going into the field, would collect a flock of any size into a compact mass, but then he found difficulty in giving him to understand when he was to let them go at large, and asked for instruction.

We referred his letter to a gentleman of much experience in the observation and use of such dogs in the old countries; and, on his receiving a letter from him, our original correspondent writes what may be of use in the management of dogs generally, for all purposes.

We are inclined to believe in the superior efficacy of mild and humane over testy and bellicose treatment, in our management and intercourse with dogs, as well as with other animals, not excepting man—who we seriously believe to be more inclined than any other animals to make war wantonly on his *own species*.

J. S. SKINNER, Esq.

BEDFORD (near Augusta), Ga., Jan. 7. 1847.

Dear Sir: Your kind favor of the 16th December came to hand in regular course of mail, and I return you my grateful acknowledgments for your attention. Since its receipt, I have received one from Wm. MURDOCH, Esq., of Asheville, giving me such directions as will aid me much in the management of my Shepherds' Dogs.

He advises kind treatment, with suitable punishment, administered with judgment, when the dogs are too rash with the sheep; and observes that the dogs possess great sagacity—will watch every look and gesture of the owner—and the government must be left to the judgment of the shepherd, as each shepherd has his peculiar management of his dog, as each sportsman has his peculiar mode of treating his pointer or setter. Young dogs should at first be coupled to well-trained old dogs.

It will give me great pleasure to add to the number of subscribers to your valuable work. . . . If my agricultural ideas are worth anything to me (and I think they are), I am much indebted to you, and therefore owe you the exertion to increase your list of subscribers. Your "American Farmer" was the first agricultural paper that ever fell into my hands; and I only regret I did not read it with more care.

Most respectfully,

J. L. C.

LETTER IV.

THE ADAPTATION OF THE SOILS, HERBAGE, &c. OF THE SOUTHERN STATES TO SHEEP HUSBANDRY, CONTINUED. 2. OF THE MIDDLE OR HILLY ZONE. 3. OF THE MOUNTAIN REGION.

Climate, Soils, and Productions of the Middle or Hilly Zone—Its evident Adaptation to Sheep Husbandry... The Mountain Region... Altitudes of different Ranges and Peaks—Their general Shape—Freedom from Rocks, Precipices, &c... Table Lands—Their Geological Formations—Products... Mr. Clingman's Letter describing the Roan and other Mountains in North Carolina... Mr. Buckley's Counter Statements... Mr. Earle's Description of the Mountains in Henderson and Rutherford Counties, North Carolina... Col. Colston's Statements in relation to the Mountains in Berkeley County, Virginia... Hon. A. Stevenson's in relation to the Blue Ridge, and the Mountains in the South-west of Virginia—Hon. W. L. Goggin's in relation to the same... Judge Beatty's Account of Sheep Husbandry on the Cumberland Mountains—Mr. Kramer's... Mr. Buckley's Views in relation to the North Carolina Mountains examined and objected to... Climate of the Roan and others compared with that of the Grazing Lands of New-York... Statistics showing the Forwardness of the Seasons and the Temperature in New-York... Effect of Elevation on Temperature On Vegetable Productions.

Dear Sir: The middle or hilly zone is high, dry, healthy, and has a mild and, compared with the North, equable climate.* Its soils possess the ingredients due to its formation—disintegrated granite—and are far more fertile than those of the lower zone. Sometimes on the summits of the hills they are poor and thin, and there are occasionally extensive ranges of poor land, as in Virginia; but as a general thing, they vary from fair to good; and on the bottom lands of some of the rivers and larger creeks, they possess remarkable fertility. The valleys, however, are generally narrow, and are everywhere the bed of streams, which abundantly water this whole region, and furnish inexhaustible facilities for mills and manufacturing. The slight cohesion of the soil, aided by the face of the country and the system of tillage pursued in many parts of it,† render it peculiarly subject to washing by heavy rains. The hill-sides are frequently cut into deep gullies, rendering aration difficult,‡ and the surface soil is washed into the valleys and into the beds of the creeks, not only impoverishing the high lands, but, by impeding the courses of the streams, in some regions converting those of the valleys into unhealthy marshes.||

Grasses suited to the climate flourish *when sown*, and on lands not utterly worn out, throughout all this region; and there is little doubt that every variety which could be acclimated on the sands of the lower zone, could be more readily acclimated here—and probably various others. The pea succeeds in nearly every situation; oats also form a valuable manuring crop in some parts; while on many of the alluvial bottoms, such, for example, as the Blackjack lands of South Carolina—rye grows luxuriantly, answering a valuable purpose either for grain, manure, or for winter

* The range of the thermometer is sometimes 60° to 75° in a single month (March or April) in New-York!

† That is, a constant succession of clean tillage crops, such as cotton, corn, and tobacco.

‡ The Fishing Creek Agricultural Society, in their Report before quoted from, say: "The only really waste land we have is our old fields, many of which are so washed and gullied as to be absolutely irreclaimable." Mr. Ruffin says that "the destruction both of soil and of fertility has been enormous" from this cause.

|| "The country was, at first, as its features indicated, nearly free from malaria and all its noxious effects. But as soon as the incessant and injudicious use of the plow caused the soil to be washed from the hilly grounds into the bottoms, the before unobstructed clean bordered channels of all the small streams were filled and clogged with earth, and vegetable rubbish, and finer matter, and the adjacent low lands were thereby rendered swampy. The washing of the high land earth into the valleys so altered the original surface level as to kill the trees; and their decay, and, later, the obstructions by their fallen trunks, increased the general evil. . . . I infer that these causes "have mainly served to nourish malaria and increase the malignity of disease." [Ruffin's Ag. Survey of S. C., 1843, p. 96.]

feed for stock. In this last particular, it would be, as I have before said, an important auxiliary in sheep husbandry.

The adaptation of most of this region to sheep husbandry is too obvious to require extended comment; and it becomes, therefore, simply a question of profit and loss, whether it is expedient to introduce it.* Let us turn therefore, to the adaptation of the mountain region to this branch of industry.

The altitude of the southern mountains, with a few exceptions, is not very considerable. The loftiest, the Black and the Roan, in North Carolina, are respectively 6,476 and 6,038 feet in height. The Peaks of Otter, the highest, and summits of the Blue Ridge in Virginia, are 4,250, and the highest Alleghenies 2,500 feet high. Table Mountain in South Carolina is about 4,000, and the terminal masses of the Blue Ridge in Georgia are about 1,500.† The height of the Cumberland Mountains, the most western chain, I nowhere find stated, but they are not reputed as high as some of the preceding. It will be seen, therefore, that none of the southern mountains rise above the range of the grasses. They are usually broad at the base, easy of ascent, and rounded or flattened on their summits, instead of rising from narrow bases into steep pyramidal forms with conical peaks; and from their geological formations and their shape (resulting probably from that formation,) they are uncommonly free from exposed rocks, precipices and abrupt acclivities. With the exception, perhaps, of the Cumberland chain, large, exposed rocks abound far less, on most of these mountains than in many parts of New-England, or even the Old Red Sandstone region of Pennsylvania, which are not only pastured, but plowed! Indeed, a side-hill plow, drawn by oxen, could be used on very many of the southern mountains, if cleared, to their very summits; and this is true, singular as it may appear, of some of the loftiest of them.‡ The Cumberland Mountains are spoken of by Doct. Morse, as "stupendous piles of craggy rocks," and in these statements he has been followed by more recent geographers. But if this description applies to some portions of the chain, it certainly does not to others, as I shall have occasion to show.

On the sides, and sometimes on the summits of the mountains in different parts of this whole region, extensive plains or table lands, already pretty well covered with wild and domestic grasses and nutritious esculents, not unfrequently occur. Esculents suitable for sheep are to be found in greater or less quantities on nearly all of them.

West of the summit of the Blue Ridge, the geological formations, as has before been stated, belong to the Transition period—a rather unusual circumstance in mountain ranges, and undoubtedly more indicative of fertility in the superincumbent soils than the ordinary Primary formation.¶ Indeed, they are the same with those of the best grazing lands of Southern New-York, and subtracting climatic and other effects of elevation, they should possess a general correspondence in their properties and products, with the latter.¶

* This question will be fully discussed in a subsequent letter.

† For these altitudes, I am indebted to Professor Mitchell.

‡ For example, the Roan.

¶ It is true that soils formed from Primary rocks, when sufficiently fertile to sustain herbage of any kind, are peculiarly adapted to the production of sweet grasses; but mountains of this formation are usually steeper, from the slower decomposition of granite, gneiss, and other Primary rocks, and their steepness exposes them to increased abrasion, or washing. Hence their soils frequently but thinly cover the rocks, and are of a meager and lixiviated character.

§ To wit, abrasion and denudation by rains. And, moreover, the "northern drift" of New-York has added a little time to the soils formed from these rocks, and thus supplied, measurably, a want existing in all of them for most tillage crops.

¶ For example, the "State Hills," which rise on the west of Augusta, Rockingham, Shenandoah, Frederick and some other counties in Virginia, are composed of the same rocks (Hamilton group, including Genesee slate of the New-York system,) which underlie some of the best soils in New-York; and much of the land between these hills and the Alleghenies rests on the same rocks, (Chemung,) which underlie the southern grazing region of New-York.

In ascertaining the particular products of these mountains, their climate, and general adaptation to sheep husbandry, I will first call your attention to the often quoted letter from Hon. T. L. Clingman, of North Carolina, to John S. Skinner, Esq., in 1814. Mr. Clingman says :

" You state that you have directed some attention to the Sheep Husbandry of the United States, in the course of which it has occurred to you that the people of the mountain regions of North Carolina, and some of the other Southern States, have not availed themselves sufficiently of their natural advantages for the production of sheep. Being myself well acquainted with the western section of North Carolina, I may perhaps be able to give you most of the information you desire. As you have directed several of your inquiries to the county of Yancey, (I presume from the fact, well known to you, that it contains the highest mountains in any of the United States.) I will, in the first place, turn my attention to that county. First, as to its elevation. Dr. Mitchell, of our University, ascertained that the bed of Tow River, the largest stream in the county, and at a ford near its center, was about 2,200 feet above the level of the ocean. Barnsville, the seat of the court-house, he found to be between 2,300 and 2,900 feet above it. The general level of the country is, of course, much above this elevation. In fact, a number of the mountain summits rise above the height of 6,000 feet. The climate is delightfully cool during the summer; in fact there are very few places in the county where the thermometer rises above 80° on the hottest day. An intelligent gentleman who passed the summer in the northern part of the county (rather the more elevated portion of it) informed me that the thermometer did not rise on the hottest days above 76°.

" You ask, in the next place, if the surface of the ground is so much covered with rocks as to render it unfit for pasture? The reverse is the fact; no portion of the county that I have passed over is too rocky for cultivation; and in many sections of the county one may travel miles without seeing a single stone. It is only about the tops of the higher mountains that rocky precipices are to be found. A large portion of the surface of the county is a sort of elevated table-land, *undulating*, but seldom too broken for cultivation. Even as one ascends the higher mountains, he will find occasionally on their sides flats of level land containing several hundred acres in a body. The top of the Roan (the highest mountain in the county except the Black) is covered by a prairie for ten miles, which affords a rich pasture during the greater part of the year. The ascent to it is so gradual that persons ride to the top on horseback from almost any direction. The same may be said of many of the other mountains. The soil of the county generally is uncommonly fertile, producing with tolerable cultivation abundant crops. What seems extraordinary to a stranger is the fact that the soil becomes richer as he ascends the mountains. The sides of the Roan, the Black, the Bald, and others, at an elevation even of five or six thousand feet above the sea, are covered with a deep, rich vegetable mould, so soft that a horse in dry weather often sinks to the fetlock. The fact that the soil is frequently more fertile as one ascends is, I presume, attributable to the circumstance that the higher portions are more commonly covered with clouds; and the vegetable matter being thus kept in a cool, moist state while decaying, is incorporated to a greater degree with the surface of the earth, just as it is usually found that the north side of the hill is richer than the portion most exposed to the action of the sun's rays. The sides of the mountains, the timber being generally large, with little undergrowth and brushwood, are peculiarly fitted for pasture grounds, and the vegetation is in many places as luxuriant as it is in the rich savannah of the low country.

" The soil of every part of the county is not only favorable to the production of grain, but is peculiarly fitted for grasses. Timothy is supposed to make the largest yield, two tons of hay being easily produced on an acre, but herds-grass, or red-top, and clover succeed equally well; blue-grass has not been much tried, but is said to do remarkably well. A friend showed me several spears which he informed me were produced in the northern part of the county, and which by measurement were found to exceed 70 inches in length. Oats, rye, potatoes, turnips, &c., are produced in the greatest abundance.

" With respect to the prices of land, I can assure you that large bodies of uncleared, rich land, most of which might be cultivated, have been sold at prices varying from 25 cents to 50 cents per acre. Any quantity of land favorable for sheep-walks might be procured in any section of the county at prices varying from one to ten dollars per acre.

" The few sheep that exist in the county thrive remarkably well, and are sometimes permitted to run at large during the winter without being fed and without suffering. As the number kept by any individual is not large enough to justify the employment of a shepherd to take care of them, they are not unfrequently destroyed by vicious dogs, and more rarely by wolves, which have not yet been entirely exterminated.

" I have been somewhat prolix in my observations on this county, because some of your inquiries were directed particularly to it, and because most of what I have said of Yancey is true of the other counties west of the Blue Ridge. Haywood has about the same elevation and climate as Yancey. The mountains are rather more steep, and the valleys somewhat

broad; the soil generally not quite so deep, but very productive, especially in grasses. In some sections of the county, however, the soil is equal to the best I have seen.

"Buncombe and Henderson are rather less elevated; Asheville and Hendersonville, the county towns, being each about 2,200 feet above the sea. The climate is much the same, but a very little warmer. The more broken portions of these counties resemble much the mountainous parts of Yancey and Haywood, but they contain much more level land. Indeed the greater portion of Henderson is quite level. It contains much swamp land, which, when cleared, with very little if any drainage, produces very fine crops of herds-grass. Portions of Macon and Cherokee counties are quite as favorable, both as to climate and soil, as those above described. I would advert particularly to the valley of the Nantahalali, in Macon, and of Cheoh, in Cherokee. In either, for a comparatively trifling price, some ten or fifteen miles square could be procured, all of which would be rich, and the major part sufficiently level for cultivation, and especially fitted, as their natural meadows indicate, for the production of grass.

"In conclusion, I may say, that as far as my limited knowledge of such matters authorizes me to speak, I am satisfied that there is no region that is more favorable to the production of sheep than much of the country I have described. It is everywhere healthy and well watered. I may add, too, that there is water-power enough in the different counties composing my Congressional District to move more machinery than human labor can ever place there—enough, perhaps, to move all now existing in the Union."

A writer in the *Albany Cultivator*, Mr. S. B. Buckley, of Yates county, New-York, who has visited these mountains, thus objects to the views of Mr. Clingman :

"These mountains have a cold, damp climate, the summits of the highest being covered with clouds and mists a large portion of the summer season. Cold rains are of frequent occurrence, doubtless causing the deep vegetable mould alluded to by Mr. C. A large portion of the county of Yancey is an elevated table-land which is so damp and cold that the inhabitants do not raise corn sufficient for their own consumption. . . . Mr. Husted informed me that in many seasons there was scarcely a month in the year without frost . . . that he had been on the top of the Roan on the 25th of June, when a snow storm arose and completely covered the mountain, and that there were few days in the year but that it was foggy on the Roan. . . . I have ascended most of the high mountains in that State, and rarely without encountering a storm, or finding their tops covered with mists, which disappeared in the cool of the evening, to be resumed by the warming rays of the morrow's sun. In encamping on the mountains, I generally found the thermometer to range from 45° to 60°, and on the high mountains, during the day, it seldom rose above 65°. The inhabitants of the valleys pay great attention to the raising of cattle and horses, which, in the summer season, are turned upon the mountains in what is termed 'the range,' which consists of tall weeds, native grasses, and in many places white clover has become naturalized. * * * *

"These remarks will apply more or less to the mountainous region of Haywood and Macon counties, from which we conclude that they are not suitable to the raising of fine-wooled sheep, judging from their elevation, damp and cold climate, which, as before remarked by Mr. C., creates a deep vegetable mould, in which a horse will sink up to the fetlock. And would not sheep sink in also, and be liable to have the foot-rot? And in yeanning time would not many lambs be lost from the frequent cold rains so common there during the month of May?""

In a previous communication in the *Cultivator* the same writer says : †

"On the 12th of May I arrived at Asheville, (the capital of Buncombe county,) intending to visit Mt. Pisgah, a high conical mountain in full view, about twelve miles distant, overtopping its neighbors. I was told that the season was not far enough advanced to bring vegetation forward on the high mountains. . . . The climate of this region is not much, if any, warmer than that of Western New-York. During the summer of 1842, the thermometer ranged generally from 70° to 85° in the valleys, while on the mountains it was frequently about 60°, and sometimes much lower. . . . When I left the southern portion of Alabama, it was the middle of March; the woods were green, with their full expanded leaves; in about a week I had reached the elevated region south of Huntsville, in the northern part of the State, where the leaves had not yet attained half their usual size. From the 1st to the 10th of April, in Middle Tennessee, the leaves were nearly full grown and the inhabitants were busy in planting corn; but at the middle of April, for thirty miles on the table land of the Cumberland Mountains, the trees had just begun to put forth their leaves, and the ground was white in the morning with a severe frost.

"On descending into the plains of East Tennessee, the country was green with verdure, and the farmers were there also busy in planting corn, and now, the middle of May, among

* See *Albany Cultivator*, 1846, p. 242.

† *Ib.*, 1846, p. 174.

the mountains of North Carolina, I found myself where vegetation had scarcely clothed the plains and woods with green, while the leaves of the high mountain trees were about half grown. I should also remark that the spring of 1842 was from two weeks to a month earlier than usual."

I record a portion of the last extract for subsequent reference; and the object of these communications being to arrive at the *truth*, and not to ride a favorite hobby, or advance a preconceived theory, I have thought it proper to give the substance of all this gentleman's remarks, embodying as they do *all* the objections, real or supposed, which exist against the *highest mountains in the whole Southern States* for the purposes of sheep husbandry.

Per contra, we have the following statements of Henry M. Earle, Esq., of Pacolet, Rutherford Co., North Carolina: *

"On the question whether wool-growing will succeed in North Carolina or not, I would say that it depends entirely upon the exertions used, as I am thoroughly convinced that the country and climate are altogether favorable. The objections raised by Mr. Buckley, if they existed in all the mountain region, might be considered serious; but as they can only be offered against a few very high mountains, situated in the midst of many other mountains, and far from any level or plain country, such a hiding place as he speaks of would not be such a place as persons raised in civilized or refined society would wish to settle in. The Roan and Black Mountains were selected by Mr. Thos. Clingman, because they were the most elevated and noted mountains in Yancey Co., and not, I presume, because he thought they would afford the best pasturage for sheep; if so he was mistaken. On those mountains and in their vicinity are the finest grazing lands for cattle; and so there is in the low, marshy land of South Carolina; but neither location is favorable for sheep. I agree with Mr. Buckley, 'that a large portion of the county of Yancey is an elevated table land, which is so damp and cold that the inhabitants frequently do not raise corn sufficient for their own consumption.' This is partly owing to the climate; but mostly to the character of many of the inhabitants of those sparsely inhabited regions, where they too frequently depend upon the success of the chase for the largest portion of their subsistence.

"But if Mr. Buckley, or any other gentleman of observation, will come 60 miles farther south—on the line of the Blue Ridge, into Henderson and Rutherford counties, about the Tryon Mountain, which is the first that he will ascend in rising up from the level country east of the Blue Ridge, along the Howard-Gap Turnpike—high on the acclivity of the Tryon he will find a bench of land which possesses a very peculiar characteristic. At night, generally, there is a pleasant breeze, and for several miles along the mountain side there is never any dew to be found, and it is very rare that they have frost except in winter; and when the whole country above and below is covered with sleet, along this mountain side there is none. Here grow the finest native grapes that I ever saw, and the fruit crop never fails. And here are grown the heaviest wheat and rye in all the country. Here the inhabitants have the first dawn of the morning sun, and persons unaccustomed to the view fancy that they can almost see him coming up from the watery deep. On the eastern side of this mountain is the earliest pasturage in spring, and the latest in the fall that is found in the whole range of mountains.

"This location is about 46 miles E. S. E. from Ashville, and 20 miles S. S. W. from Rutherfordton. Here two of those ever persevering men from the North, called Yankees, have commenced to wall in a vineyard, and to cultivate the broom-corn for manufacturing brooms. They have the purest water that flows out of the earth, and around them are beautiful cascades more than a hundred feet high, and above them the toppling peak of the Tryon.

"Thousands of persons throng this mountain region during the summer, to enjoy the pure, bracing atmosphere, which on the eastern face of the mountain is dry and healthful; but farther back, in the mountains of the French Broad, there is much more dampness and heavy fogs.

"You may readily conclude that along the eastern slopes of these mountains, the climate and country are finely adapted to the growth of wool, as may also be seen by many of the fine flocks of native unimproved sheep, which wander here untended, regardless of wolves or dogs, their greatest enemies.

"For two hundred miles along the eastern slopes of these mountains, south, there are situations well suited for large flocks of sheep, and land is cheap. In many places it does not cost more than 20 cents per acre, and very fair land may be had for 40 cents per acre."

In an Address,† remarkable for the force and pertinency of its sugges-

* See Albany Cultivator, 1846, pp. 335-336.

† Delivered in Martinsburg, Va., Oct. 30th, 1845, before the Berkeley County Agricultural Society, published in the Valley Farmer, Dec. 1845, and Jan. 1846.

tions, Col. Edward Colston, of Berkley county, Virginia, makes the following statements :

"The western part of our county, containing perhaps 30,000 acres, is mountainous. I have ridden there for ten miles without seeing a human habitation, and although from its abundant herbage it might sustain for its owners 20,000 head of sheep, not a single one is to be found grazing on its surface. In this region may be found, also, much land fit for cultivation, with fine meadows and abundant water. Yet all this is worthless to our community, and a dead capital to the proprietors. There is territory and grass enough here to be divided into three or four sheep-walks, each sustaining from 3,000 to 4,000 sheep during the summer, with meadow and arable land enough, at a small expense, to provide amply for winter sustenance."

Hon. Andrew Stevenson, of Virginia, in a letter to Mr. Skinner,* says :

"Virginia has many advantages for breeding sheep, not surpassed in the United States. The middle part of the State, and especially the whole range of the south-west Mountains and Blue Ridge, afford the greatest facilities for fine sheep-walks. Hills covered with fine herbage, extensive inclosures, abundance of running water, and well sheltered by trees against the heat and sun of summer."

The following extracts are from a communication in the Monthly Journal of Agriculture,† by Hon. W. L. Goggin, who recently represented the District he describes in Congress :

"Bedford, the county in which I reside, is bounded on the south side by the Staunton River, on the north by the James River, while its western extremity, the whole length, reaches the top of the Blue Ridge. . . . The Peaks of Otter‡ are situated in this county, on the north-west corner—they are not only beautiful themselves, when seen as they are in the distance, but the whole range of the Blue Ridge presents, perhaps, here, the most interesting view of the kind in the State. These mountains afford an unlimited range for stock, and the advantages for sheep-walks (mild as is the climate, combined with the productiveness of the soil) that are nowhere equaled, as is believed, except by similar situations in the neighboring counties. . . . Ranges for sheep may be had at a very reduced price on the mountains, and where, too, could be produced all the grasses in which they delight, such as the red and white clover, the meadow fox-tail, short blue meadow-grass, lucern, rye-grass, &c. These advantages, and then the beautiful, clear streams which abound in all the mountain regions, invite a pastoral life." Speaking of Amherst and Nelson counties, he says : "The ranges for stock here, too, are extensive, and the beautiful, rich mountain sides interspersed with farm-houses, some of them even elegant mansions, betoken an independence among the inhabitants that is often found in such situations. Many of the mountains, to their very summits, are covered with the richest verdure." Of Madison and Greene counties he says : "Here, too, are abundant ranges, and the wonder is that sheep husbandry is not introduced."

The character of the loftier mountains of Virginia and North Carolina, for the production of grasses, would seem to leave no doubt, in this particular, in regard to the *lower* ones which form the prolongation of the same chains in South Carolina, Georgia, and Alabama. Let us now turn our glance to the great western chain—the Cumberland Mountains—in Kentucky and Tennessee.

The following extracts are from a communication published by Hon. A. Beatty in the American Agriculturist :

"But it is not upon our high-priced rich lands alone that we can carry on sheep husbandry to advantage. Kentucky has a belt of hill and mountain country, bordering on the Virginia line on the east, and on the rich lands of the State on the west, averaging about seventy-five miles in width, extending from the Ohio River and Big Sandy, latitude 33° 30', to the Tennessee line, 36° 30' north. The whole of this region is admirably adapted to sheep husbandry; the most northern part but a few minutes north of my residence, and extending about two degrees farther south. The lands are very cheap: the State price of those not yet appropriated only five cents per acre, and those purchased second-hand, more or less improved, may be had from 25 to 50 cents per acre, and still less when unimproved. This country in a state of nature furnishes, during the spring, summer, and fall months, a fine range for sheep, and is susceptible of great improvement by clearing up and sowing the cultivated grasses for winter feeding. This whole country is finely adapted to the Spanish

* Monthly Journal of Agriculture, July, 1845, pp. 37-39.

† *Ib.*, October, 1845, pp. 181-183.

‡ The loftiest mountains, as before stated, of Virginia.

mode of sheep husbandry. Very large flocks might be driven to the mountain region, some thirty to sixty miles from the rich lands, immediately after shearing time, grazed till late in the fall, and then brought back to be sustained during the winter on the luxuriant blue grass pastures of the rich lands of the interior.

"A very intelligent friend, residing in the southern part of the above district of country, speaks of it in the following terms: 'One of the strongest proofs of this region of country being favorable to the growing of sheep stock is that we are situated in the same degree of north latitude with the sheep-raising parts of Spain—Leon, Estremadura, Old Castile, &c.—only that our mountains are more richly and abundantly clad with luxuriant wild grasses and fern, pea vine, and shrubbery, than the mountain regions of Spain, where they raise such abundant stocks of sheep. Wayne County, with a few adjoining counties, affords more fine water-power than any country of the same extent that I have ever known; and for health and fine, pure drinking water, no country excels it on the face of the globe. Now is the time to commence the business of sheep husbandry, while land can be got almost for nothing. It is worthy of remark that our sheep, which are suffered to roam and graze in the mountains altogether, produce about *one-fourth more wool at a shearing than the sheep that are raised and grazed altogether on our farms, and of much better quality.*' In another part of his letter he says: 'The tops of the mountains of Spain are sterile, without verdure, producing no food for sheep, or other animals, to graze on. Our mountains are quite different. They are thickly clad from bottom to top, and all over the top, with fine rich wild grasses and shrubbery of every variety, for stock to graze on. In the midst of our mountains are to be found a great abundance of salt water and stone coal of the finest quality, together with a great variety of mineral waters and pure springs.'

"Another friend, residing in Knox County, writes to me: 'My sheep upon my farm, adjoining Barbourville, do not thrive, even with pasture and winter food, like the sheep in the extremities of the county, which have neither pastures nor winter food, except what they get in the woods. Without cultivated grasses of any description, sheep will live and do well all the winter, subsisting on the spontaneous growth of the country.'

"Another friend, residing in the northern portion of the above-described mountain region, writes that 'the counties of Carter and Lawrence, and the eastern portion of the State, are admirably adapted to sheep husbandry. There are several flocks of sheep in this neighborhood that thrive and increase wonderfully, *running at large*, at little cost or trouble to their owners. Many flocks have no other reliance, during the winter, but what they get in the woods. The great advantages of this country for sheep husbandry are, the cheapness of the land, its adaptation to grasses, grain, and roots—its healthfulness. Sheep delight in mountain or hilly land; the natural evergreens and shrubbery upon which sheep can feed and subsist on in winter; though it is not safe to rely altogether upon these.'"

Mr. C. F. Kramer of Woolverly Farm, Marion Co. Tennessee, in a communication in the Nashville Agriculturist,* says:

"After having spent part of the years '43 and '44 on different parts of the Cumberland Mountains—the part of Tennessee more particularly recommended by all writers in your journal, and others, for sheep-walks—I have, since last fall, settled on a portion of them near Jasper, Marion Co. and will, as briefly as possible, give you the result of my experience, which, I believe, fully remove any erroneous impressions hitherto made.

"First, as to climate: The extreme salubrity of the mountains makes them the general refuge of the sick. Sheep here are remarkably healthy, and exempt from disease. The temperature is very even, varying during summer seldom more than from 75° to 80° of Fahrenheit, nor in winter more than from 45° to 30°. Snow during the two winters, little as there was of it, never remained forty-eight hours on the ground.

"The forest, so far from being dense, seldom contains more timber, after cutting out the smaller growth, as dogwood, &c. than is desirable for woodland pasture.

"The rocks, as far as my rambles have extended, are 'few and far between.' The better spots of soil (and there are enough to provide every farm with sufficient remunerating arable land, under a provident and enlightened system of tillage) are covered with nutritious weeds, as pea-vine, &c. &c. which are nearly all greedily devoured by sheep and cattle, and on which they fare well. The poorer soil is covered with sedge-grass, which my sheep have invariably eaten with avidity.

"When our herds and blue grass lands, which we are laying down, will be fit for pasturing, the cost of wintering will be greatly reduced, as the former yields good grazing in February—the latter during the whole winter. Our young cattle kept in good condition on the winter-range and two ears of corn per head per day.

"Although the wolves of our mountains are larger than those of the prairies, and may be more difficult to exterminate entirely, yet, thanks to our good hunters, their ranks have been already so thinned that they mostly prowl about alone, or at most in pairs, committing their depredations by night, on the sheep and hogs that are left to shift for themselves. In the

two years that I have been here, I know of but two instances of their having attacked young stray cattle by night. By day, sheep are perfectly safe; and I should presume that every good sheep-master would have his flocks, for inspection, home at night, when any common fence will be an ample safeguard for them."

To recur, for a moment, to Mr. Buckley's statements in relation to the Roan and some of the contiguous mountains in North Carolina—if we concede all his positions to be correct—it but proves that they are exceptions to a general rule. But a review of his facts, it seems to me, scarcely justifies his conclusions.

The vegetation which seemed so backward to him, coming from the warmer climate of Alabama and Lower Tennessee, was in fact but little, if any, later than that of the elevated grazing lands of Southern New-York. The following table* will show the average forwardness of the seasons at the location of fifty-eight Academies, scattered over New-York, for a term of fifteen years. And these Academies, as would be supposed, are rarely found on the high bleak hills. In fact, the number in the southern grazing region is but small, and they are mostly on the low bottoms of the larger streams. The same remark will also apply to the high region between the St. Lawrence and Lake Champlain.

TABLE NO. 5.

| | Mean Date. | No. of Localities. | No. of Observations |
|----------------------------|------------|--------------------|---------------------|
| Shadblow in bloom..... | May 1 | 48 | 168 |
| Peach do. | " 2" | 57 | 175 |
| Currants do. | " 4 | 58 | 269 |
| Plum do. | " 6 | 52 | 264 |
| Cherry do. | " 7 | 52 | 250 |
| Apple do. | " 15 | 59 | 374 |
| Strawberries ripe..... | June 12 | 58 | 210 |
| Hay harvest commenced..... | July 18 | 34 | 127 |
| Wheat do. do. | " 25 | 45 | 186 |
| First killing Frost..... | Sept. 23 | 57 | 471 |
| First fall of Snow..... | Nov. 5 | -- | 536 |

* As the Peach does not grow in the northern part of the State, this date must be considered the mean for the southern and middle parts only, and hence is too early as compared with other trees.

The blossoming of the apple tree in the grazing regions of New-York takes place when the leaves of the forest trees are considerably less than half grown, as Mr. B. found them on the "high mountain trees" of North Carolina on the 12th of May.

Snow storms sometimes occur in New-York as late as the one recorded by Mr. B. on the Roan; cold, damp fogs are not found destructive to sheep in some parts of England and Scotland, where they prevail probably quite as much as on these mountains; and there are *many* parts of the grazing region of New-York, and *good grazing* lands, too, where the inhabitants "do not raise corn sufficient for their own consumption." As Mr. B. gives neither the dates nor the altitudes of his own thermometrical observations, no conclusions can be deduced from them. Speaking of the region about Asheville, the more definite statement is made by him, that during the summer of 1842, the thermometer ranged generally from 70 to 85 degrees, (which he pronounces not much, if any, warmer than Western New-York,) "while on the mountains it was frequently about 60 degrees, and sometimes much lower." If by *frequent*, he meant *ordinary* temperature, the summer climate of these lofty mountains much resembles that of New-York in June—usually considered the month of the pleasantest

* This table was prepared by James H. Coffin, a tutor in Williams College, from the Report of these facts annually required to be made by the Academies to the Regents of the University. This and some other tables and statements of Mr. C.'s, which I shall have occasion to quote, appear in a very able paper from him on the Climate and Temperature of New-York, in the forthcoming volume on Agriculture, in the Natural History of the State: some sheets of which have been politely sent me by Doct. Emmons, the State Geologist, who has that volume in charge.

temperature of the year—equally removed from the chilliness of spring, and the sultry heats of the last two summer months. But as the altitudes of the latter observations are not given, they present us nothing definite or tangible. A smart walk of a few moments up or down a mountain side, would carry one through a variation of temperature amounting to a degree. By the rule of Professor Leslie,* commonly adopted, 300 feet of elevation diminishes the temperature 1° ; but the experiments of Humboldt, Gay-Lussac, and various other observers, have shown that this cannot be relied upon. One degree is usually equivalent to a greater ascent. Mr. Coffin (in the paper before alluded to) deduces the conclusion that in the State of New-York, the ascent necessary to decrease the temperature 1° is 350 feet. Taking the mean of the range of temperature of Asheville, as stated by Mr. B. it gives $77\frac{1}{2}^{\circ}$ as the average summer temperature of that place, which, as will appear in the table below, is about 10° higher and warmer than that of New-York for the same season and year, (excepting on the beds of two rivers—the Hudson and Mohawk.) Applying the New-York rule to the region of Asheville, it would require, then, an elevation of something like 3,500 feet on the mountain sides above that place, to equalize the temperature with that of the greater portion of New-York.

To show the entire accuracy of the subjoined table of temperatures, I would remark that it is founded on the Annual Reports of the Academies to the Regents of the University. The observations are therefore made by correct instruments,† on fixed conditions, and by scientific men. I have selected the points indicated in reference solely to a fair latitudinal and geographical distribution over the State;‡ and to enable you to find them on the map, the name of the *place*, instead of the Academy, is given :

TABLE NO. 6.

| | Latitude. | Elevation. | Temperature 1842. | | | | | | Remarks. |
|---------------|------------------|------------|-------------------|-------|------|----|----|----|---|
| | | | June. | July. | Aug. | | | | |
| Flatbush... | $40^{\circ} 73'$ | 40 | 64 | 28 | 72 | 16 | 69 | 97 | Near the extreme southern point of Long Island... |
| Po'keepsie | 41 41 | | 61 | 29 | 76 | 83 | 71 | 56 | On the Hudson. Elevation not given..... |
| Albany.... | 42 39 | 130 | 65 | 85 | 72 | 66 | 70 | 23 | |
| Potsdam... | 44 40 | 394 | 59 | 62 | 67 | 36 | 67 | 12 | In St. Lawrence County; north part of State..... |
| Lowville... | 43 47 | 800 | 60 | 51 | 67 | 52 | 64 | 46 | On the Black River..... |
| Utica..... | 43 06 | 173 | 63 | 58 | 70 | 15 | 69 | 15 | |
| Syracuse... | 42 59 | | 59 | 75 | 65 | 77 | 64 | 86 | { Both in same county, but given on account of difference in elevation..... |
| Pompey... | 42 56 | 1300 | 57 | 70 | 64 | 20 | 63 | 50 | |
| Homey..... | 42 38 | 1096 | 58 | 88 | 64 | 14 | 65 | 67 | In the southern or grazing region..... |
| Ithaca..... | 42 27 | 417 | 63 | 80 | 69 | 65 | 67 | 74 | Do. do. |
| Prattsburg... | | 1494 | 56 | 83 | 65 | 24 | 68 | 71 | Do. do. |
| Rochester. | 43 08 | 506 | 60 | 66 | 66 | 94 | 67 | 35 | In the heart of the Wheat growing region..... |
| Wyoming. | 42 49 | 800 | 59 | 97 | 71 | 50 | 56 | 99 | Do. do. |
| Fredonia.. | 42 26 | 345 | 63 | 42 | 69 | 60 | 68 | 71 | In the grazing region; on the shore of Lake Erie.. |
| Lewiston.. | 43 09 | 280 | 62 | 05 | 68 | 91 | 68 | 50 | On Niagara River..... |

The five last named places are in "Western New-York."

But there is one fact stated by Mr. Buckley, in relation to the lofty mountains of North Carolina, which, irrespective of all thermometrical observations, demonstrates conclusively, to my mind, their adaptation to sheep husbandry. This fact is, that *white clover* grows (of course, spontaneously,) on them. Or perhaps I should rather say, that the mountains themselves become thermometers, their vegetation registering, by a well settled natural law, their temperate climate. Says Malte Brun :

"Under the burning climate of the torrid zone, we have only to ascend the mountains, to enjoy the fruits and flowers of the temperate regions. Tournefort found at the base of Mount

* Prof. L.'s rule, however, was only made applicable by him to *tropical* regions.

† Half, probably, of the thermometers in common use are inaccurate!

‡ For the records of temperatures given, see Report of the Regents, 1843, p. 249. For latitudes and elevations of the Academies, see Report of 1838, pp. 212 to 215, and map.

Ararat the common vegetables of Armenia; half way up, those of Italy and France; and upon the summit, those of Scandinavia. Forster saw several Alpine plants upon the mountains of Terra del Fuego."

Mr. Mudie also remarks :

"If we take each mountain as the index of its own meridian, we shall find that each one expresses, by its vegetation, all the varieties of climate between it and the pole."*

Humboldt, and our own Doct. Forry, notice an equally striking development of this law, on the Western Continent.†

This would go to show what I have little doubt is the fact, (my impressions, too, being strengthened by a comparison of latitude, elevation, and recorded thermometrical observations,) that on the sides of the Roan and other lofty mountains of North Carolina, and pretty well *up* on their sides, too, the climate is not greatly dissimilar from that on the high grazing lands of New-York and New-England. On the sweetest and best of the latter, white clover always comes up spontaneously, and will immediately re-sward any field thrown out of tillage. It sometimes flourishes on soils of ordinary fertility, but never on very sour or boggy ones, or on those the poachy character of which would render them liable to communicate hoof-rot or other diseases. It indicates, most decidedly, both a soil and climate fitted for sheep.

You will not understand, Sir, of course, that in the remarks made and facts stated, at so great length, in relation to three or four mountains, my object has been simply to refute the views of Mr. Buckley in relation to them. In a region of 70,000 square miles, the unadaptation of half a dozen mountains, or a much greater number, to this or any other branch of husbandry, would be of but little comparative importance. Anticipating, however, the croakings of the timid—the exaggerated counter statements of those rash and sanguine men who are ever ready to rush into whatever is *new*, without judgment to guide or perseverance to sustain them : who abandon their undertakings at the first obstacle, and apologize for their ficklety by magnifying the difficulties encountered by them : I deemed it expedient to lay before you some useful data for comparisons, (and conclusions,) which will be equally applicable in the case of all our southern mountains.

The hilly and level regions *west* of the mountains, and lying between them and the Mississippi and Ohio rivers, scarcely require a separate notice—particularly after the statements of Mr. Cockrill, given in my second letter. As a whole, they are undoubtedly more fertile, and better adapted to the production of the grasses, than those of corresponding latitude, in even the hilly zone, east of the mountains.

ARTIFICIAL INCUBATION.—"The mean temperature of incubation is 100° Fahr. : it may vary from 95° to 105°, and toward the close of the process may be suspended for one or two hours, or for a longer period, according to the degree of extraneous heat which the eggs may derive from their situation, without fatal consequences to the embryo." [See Johnson's "Farmers' Encyclopædia."]

* Mudie's World.

† Since making the extract above from Malte Brun, I observe the following better, or, at least, more definite expression of the same fact by Doct. Forry : "In ascending a lofty mountain of the torrid zone, the greatest variety in vegetation is displayed. At its foot and under the burning sun, *ananas* and plantains flourish; the regions of limes and oranges succeeds; then follow fields of maize and luxuriant wheat; and still higher, the series of plants known in the temperate zone. The mountains of temperate regions exhibit, perhaps, less variety, but the change is equally striking" See Forry's *Climate of the United States*.

THE TRUE COTTON REGION.

Mr. Editor: To answer fully the last communication of X. Y. Z. would require a very thorough discussion both of the history and principles of the Protective System, which would be manifestly out of place in your journal. I will therefore, with a few general remarks, abandon the controversy into which I have been unexpectedly drawn. Immediately after the passage of the Compromise Act in 1833, which provided for a reduction of duties, the price of cotton rose. The same thing has happened on the repeal of the Tariff of 1842. I do not mean to attribute the advance in cotton *solely* to these acts of Congress; but I do not doubt they have had some agency in it. The coincidences would be very remarkable, if merely accidental. With the price of cotton, the price of everything in this country advances. Should manufactures, therefore, fail to fall at once, it must not be argued that low duties do not produce low prices. Free-Trade is as yet an experiment, founded, indeed, upon the soundest reasoning, and thus far, to the extent it has been fairly tried, fully answering the expectations of its advocates. Let the act of 1846 be allowed to operate for only half the period we have submitted to the Protective System, and if it does not demonstrate that adding 50 per cent. to the cost of an article enhances its price, and taking off that much lowers it, then its friends will abandon it, surrender their doctrines, agree that 2 added to 4 makes 3, and subtracted from it makes 5, and admit that the benevolent and sagacious manufacturer seeks a monopoly to enrich himself not by selling his goods *higher*, but actually by selling them *lower*, thus practically solving the ancient paradox of "*lucus a non lucendo*."

That the prices of nearly all manufactured articles have materially fallen since our Tariff of 1816, is unquestionable. So has cotton fallen. Not only in America, but all over the world, have manufactures of all kinds and the raw materials of them come down. Have our Tariffs produced such wide-spread effects? Has *our legislation* revolutionized the world in these last 30 years? Is this what X. Y. Z. and the advocates of the "American System" would have us understand, when they tell us that we get "shirtings, plains, kerseys, plows, hoes, axes, &c. at half what we formerly paid for them?" Then they expect us to forget that for these 30 years the world has enjoyed almost unbroken peace; that for all that period the energies, mental and physical, of a very large portion (and that the most enlightened and most enterprising) of the human family, have been exclusively and ardently devoted to the advancement of all the arts and sciences which promote the prosperity and happiness of man. Monopolies and Tariffs have existed in all nations and all ages from the time of Joseph to the present day, yet what have they done for mankind in the way of *cheap production*, compared with what steam alone has accomplished since 1816? Inveterate habits of thought, large vested interest, and, above all, unwise national jealousies, have greatly retarded the progress of Free-Trade during this unparalleled era of development; but its day has at length fairly dawned, and thirty years more of peace, *under its auspices*, will unite the human race in bonds of brotherhood that shall encircle the globe, and make War a mere thing of history—banished from use, like the stylus and papyrus of antiquity and the mail armor of the middle ages.

As to the Cotton region and the actual production of the rich lands of the South-west, if the first and last paragraphs of X. Y. Z.'s last article are taken together and the average made of his own statistics, it will be seen I have not been so far wrong. Good seasons and "well managed plantations" are not to be taken as standards of the production of Agricultural countries. I gave before some examples of what *had been done* here under favorable circumstances. To go into a calculation of what *might be done* here, would occupy more time than I can spare just now and more space than you would be willing to allow me.—But my opinion grows stronger every day, that if "let alone" and allowed to enjoy the fruits of their own intelligence and industry, the planters of this region need not go elsewhere to improve their fortunes.

Allow me to say, that notwithstanding his side thrusts at "Carolina doctrines" and "chivalry," I part from X. Y. Z. in perfect good humor; and that I thank you, Mr. Editor, for your courtesy in publishing my articles. S. B.

MANUFACTURE OF SUGAR.

DEROSNE AND CAIL'S SYSTEM EXPLAINED.

J. S. SKINNER, Esq.

PARISH OF ASCENSION, La.

Dear Sir: With the view of making a small contribution to the mass of varied and most useful information contained in your valuable periodical, and in fulfillment of a promise made you, I forward the inclosed. It is a translation of a publication of Messrs. Derosne and Cail, of Paris, the object of which is to show the superiority of their system for the manufacture of sugar over all other systems. It would, indeed, seem difficult to go beyond it, either in the mechanical or chemical processes. By high lining, and filtration through animal charcoal in grains and in large masses, the juice is said to be brought to the state of a pure solution of sugar in water, which Drs. Bache and McCulloh consider the great problem to be solved in sugar making. The evaporation takes place in vacuo at a low temperature; and a saving of fuel of more than 40 per cent. is *demonstrably* realized by the "*double-effect*."

The system is in a fair way of trial in Louisiana. Notwithstanding its manifest excellence, some modifications may be found necessary to adapt it to the conditions in which the sugar-cane exists in our State. At all events, the developments of the system will not be uninteresting to sugar planters—to the *progressivists* among them, as well as to the stand-still or *Chinese*—to those who are willing, as to those who are unwilling, to adopt improvements requiring a heavy outlay.

Although the sugar-cane is not a subject of as much general interest as its congeners corn, wheat, &c., and must yield to them in importance, yet it is not without peculiar claims on public attention. True, sugar is not blood-producing, according to the Liebigian theory; it contains no nitrogen—is not dignified by the presence of the phosphates; but, if not blood-producing, it is *blood-purifying*. Besides the experience that planters have of its health-giving properties upon man and beast, during sugar-making time, it is the opinion of one of our most eminent physicians that the virtue of the catholicons, panaceas, &c. resides chiefly in the syrup, which those who prepare them pretend to have only a vesicular agency.—Now, impurity of the blood, if it is not, as the vendors of sarsaparilla affirm, the *only* source, is certainly *one* of the sources of disease. Impurity of blood in our country is owing, in a great measure, to the immense consumption of the flesh of that unclean animal, the swine; but let the consumer never eat it without molasses, and let him put a double dose of *sweetening* in his pies and puddings, his tea and coffee, his juleps and anti-flogmatics, and he may devour pork *ad libitum*.

Corollary: the "*blood*" of a country is "*pure*" in proportion to the quantity of saccharine matter consumed.

With great regard,

H. B. T.

EXAMINATION OF THE DIFFERENT PROCESSES FOR MANUFACTURING SUGAR. Tried up to this time (1843), and the Motives which should induce a Preference for the Double-Effect Vacuum Apparatus for application in the Colonies.* By Messrs. DEROSNE and CAIL.

The manufacture of beet-root sugar in France has gone through so many processes—so many different systems, such a variety of apparatus has been tried—that everything applicable to the manufacture of sugar has been subjected to the ordeal of experiment: so that, at the present time, theory being combined with practice, we may pronounce with a full understanding of the subject.

The manufacture of sugar embraces three distinct processes—1st, the mechanical, for the extraction of the juice of the cane or of the beet-root; 2d, the chemical, for the defecation of said juice; 3d, the evaporative, the object of which is to separate the sugar from the water in which it is held in solution.

* This term embraces all the European Colonial establishments in the East and West Indies.

We do not intend to examine here the mechanical processes, the object of which is the extraction of the juice from the cane. We will not include in our present investigation those advantages which consist in an increased yield of juice—advantages which are not to be neglected, but in regard to which we have still experiments to make, and to the study of which we are devoting our whole attention.

As for the chemical and evaporative processes, the object of which is to obtain from the juice extracted from the cane the greatest possible quantity of sugar, in regard to which at this day everything is known, they come entirely within the sphere of investigation which we have proposed to ourselves.

Chemical Processes.

The operations acknowledged now as indispensable in the treatment of the juice are—1st, the defecation by means of lime; 2d, the filtration through animal charcoal in large masses. These two indispensable processes give each other mutual aid.

Defecation in double-bottom Kettles, heated by Steam.

The first point in the manufacture of sugar is a good defecation, without which all subsequent operations proceed badly. The defecation should be so made as to furnish juice perfectly limpid, exempt from any milky appearance. This defecation is accomplished, in the old as well as in the new method, by means of lime. Brought in contact with the juice, lime neutralizes its acid, and concretes the mucilaginous matter given out by extraction. In the Colonies, lime is used in quantities too small to effect the separation of the heterogeneous matter, the presence of which is essentially injurious to sugar. It is well known there that defecation is more perfectly accomplished by larger doses of lime; but it has also been remarked that syrup defecated with an excess of lime *cooks* badly; hence it is used sparingly and with caution, and vegetable matters are allowed to remain in the juice, which are highly prejudicial, by converting a portion of the sugar into molasses. In the new process, a quantity of lime is employed, sufficient to effect a perfect defecation, without regard to what may happen to the syrup in the after processes. Our Derosne has employed in Cuba $7\frac{1}{2}$ measures of lime per kettle, instead of $2\frac{1}{2}$ employed in the common process.

The excess of lime which may remain in the juice is immediately eliminated after defecation by its passage through animal charcoal. This is one of the beneficial effects of this agent in the manufacture of sugar. The result is that the juice, well defecated with a sufficiency of lime, and then filtered, is nothing more than sugar and water, which only requires to be evaporated and cooked in a suitable manner to be converted into sugar containing the least possible quantity of molasses.

The kind of kettles employed in the defecation is a point of much importance.

Defecation by *naked fire** (fire directly applied to the bottom of the kettles), after the fashion in the Colonies, and as was practiced in the first stages of the beet-root manufacture, is very objectionable; because the moment the lime enters into combination with the extraneous matters in the sugar, the power should exist of immediately arresting the ebullition, so that the liquid may be at rest.—This is accomplished in double-bottom, semi-spherical kettles, heated by steam. By means of a stop-cock, the action of the caloric and the ebullition are immediately arrested, and the scum separates in two layers, one of which rises to the top of the kettle; and the other, which is heavier, falls to the bottom. In the intermediate space is a liquid perfectly clear, which is drawn off by means of a cock connected with a tube running up through the sediment into the clear liquid.

In the defecation by naked fire, when the moment of combination arrives, the fire has to be put out or damped, the ebullition still continuing for a longer or shorter time, during which the scum breaks and mixes with the mass of the juice, thereby rendering it impossible afterward to give it clearness or limpidity. This is one of the principal causes of defective manufacture. The extraneous substances remain in the mass during the whole time of evaporation and cooking, and decompose more or less of the sugar. Hence the necessity in the Colonies of continually skimming the kettles; whereas in the new system, once the juice

* In contradistinction to the application by steam, which is *indirect*.

is drawn off clear from the defecating kettle, not a particle of scum is found in the subsequent operations.

The imperfect defecation in the Colonies is the cause why the brown sugars made there do not *dissolve clean*, though their color may be good. This is an obstacle* to the direct consumption of those sugars, which must be removed.

Kettles having vernicular or gridiron pipes at the bottom have been used for defecation; such kettles do not answer well, the pipes rendering it difficult to get rid of the scum and to clean the kettles, which should be done after each strike.

The importance of the process of defecation being well understood, it will be seen how little notion of sugar-making those persons have who propose to do away with it.

Filtration through Animal Charcoal in Grains.—Employment of Large Filters.

The filtration through animal charcoal is a process which is not analogous to the filtration of water through sand. Animal charcoal acts chemically on the sugared liquid: it takes hold, as we have already observed, of that excess of lime which is necessary for a good defecation, but which becomes hurtful in the after-boiling; it absorbs the vegetable matter, which, while it darkens the color of the syrup, favors the decomposition of crystalizable sugar. Animal charcoal, therefore, acts by abstracting substances which are in combination with the juice, and not by arresting, as would a strainer, substances in *simple suspension*.

It is by not taking into account this difference, real as it is, between the proper action of animal charcoal and that of any mere filter-serving substance, that many persons have taken up the erroneous impression that animal charcoal might be dispensed with by filtering through sand or any other inert substance.

Filtration through animal charcoal is one of the most important points in the manufacture of sugar—not so much, as is generally supposed, in regard to the improvement of quality, as to increase of quantity: for upon the purity of the juice depends the amount of crystalization. There are manufacturers of beet-root sugar that employ 200 kilogrammes† of animal charcoal for 100 kilogrammes of sugar obtained. The expense is small, considering the facility of revivification.

From observations made by us during some years past, we have satisfied ourselves that it is highly important that the juice or syrup should remain a long time in contact with the charcoal. Far from being rapid, the filtration should be very slow. This consideration has induced us to substitute, in place of the Dumont filters, other filters of a different shape and of greater capacity. The smallest filters should now hold 1,200 kilogrammes of charcoal. We have had some put up in beet-root sugar manufactories which hold as much as 3,000 kilogrammes.

Although the filters employed should be of great capacity, their size does not preclude the use of any quantity of animal charcoal less than the full measure of the filter, even so little as 10 or 12 per cent. of that amount; but then the juice must remain longer in contact with it.

From the importance which, it is seen, should be attached to the chemical processes of the manufacture of sugar, no planter would, from motives of economy, be disposed to dispense, in such a system as that described in our work, either with the double-bottom defecating kettles, or with the large size filters.

Planters should bear in mind that the manufacture of beet-root sugar has become possible only since the application of animal charcoal in grains.

Processes of Evaporation.

If, for a number of years past, manufacturers agree in regard to the nature of the chemical processes to be employed in the manufacture of beet-root sugar, except as to some changes in the manipulation of those processes, the same agreement has not existed in regard to the evaporative processes.

For twenty years past, a great number of systems of apparatus have been

* NOTE BY TRANSLATOR.—This does not apply so strongly to the Louisiana brown sugars, which, although they leave a sediment when dissolved, are cleaner and better flavored than the generality of West India sugars. Our sugar is made in the fall and winter, when we are not troubled with flies and other insects, and, having a weaker juice to operate on, are obliged to use more care and cleanliness. Indeed, the adaptation of our sugars for consumption, in their unrefined state, will probably have a tendency to limit the resort to improved but expensive processes.

† 1 kilogramme=2.2 lbs. avoirdupois.

tried and successively abandoned; until, at last, opinion has settled down in favor of the double-effect vacuum system.

We say that opinion has settled down in favor of our system, although our apparatus is far from having been introduced into all manufacturing establishments; but its superiority is acknowledged, as well by those who do not, as by those who do, make use of it; and, were it not for the uncertainty that hangs over the sugar-making interest, it would be universally adopted, because it is established by the experience of the great manufacturers that without it competition is impossible.

It is now fully recognized by chemists, and admitted by all manufacturers, that ebullition at a high temperature is injurious to syrup; that under the influence of that temperature the greater part of the sugar in solution becomes uncrystallizable, and is converted into molasses. Hence the importance of rapid evaporation, by withdrawing more quickly the saccharine solution from the influence of high temperature.

It is admitted by the last chemists who have analyzed the juice of the sugar cane, that molasses is not preëxisting in it, but that it is wholly formed during the process of evaporation. Our Derosne, while in Havana, concentered, by solar heat, cane juice that had undergone no previous preparation; and he obtained a completely dry and crystalized substance, without any indication in it of the presence of molasses.

These principles, now undisputed, should therefore direct attention to that system of evaporation which secures most completely the fulfillment of all the requisite conditions.

We may class the systems of evaporation that have been successively tried in three categories:

1. Apparatus by naked fire;
2. Apparatus by steam in free air [under atmospheric pressure];
3. Apparatus in vacuo, operating at a low temperature.

We will examine successively each of these divisions, in order to bring to view the advantages and disadvantages incident to each.

Apparatus by Naked Fire.

The apparatuses by naked fire were the first to be tried, being those which naturally were the first suggested. In those apparatuses, ebullition, that causes the evaporation of the juice, begins at 100°,* and terminates when the syrup has acquired the density of the *strike*, or cooked syrup, at 115°.† This last temperature especially is highly injurious. Attempts were made in France to temper the action of this last degree of heat, by diminishing, as much as possible, the time during which the concentrated syrup was exposed to it. With this view the *bascule* kettles were constructed, by means of which a small quantity of syrup could be cooked at one time, and, when cooked, could be quickly emptied out. This contrivance did not, however, prevent the syrup from being exposed to the hurtful temperature of a blazing furnace, and from experiencing a very disadvantageous modification.

Naked fire was therefore abandoned in France, after a few years' trial, in beet-root establishments, for the apparatus by steam in free air.

In the Colonies, the mode of heating by naked fire was persisted in, and exists at this day in conditions much more unfavorable than those to which the beet-root manufacturers were subjected from the beginning. The kettles, in most cases of cast-iron, exposed to the heat of a furnace, are emptied one into another by means of ladles and buckets. During the time of emptying, the fire in the furnace continues to act, and the level of the syrup falling continually, that portion which is exposed on the sides of the kettles is burnt; hence the *caramelization* of a portion of the saccharine matter, which, mixed with the syrup, forms a leaven that decomposes a portion of the sugar. The cooked syrups thus obtained yield but from 45 to 50† per cent. of crystallizable sugar.

Kettles heated by naked fire, called *jumelles*, were tried in the Colonies, as well as *bascule* kettles; but it was found that the advantage resulting therefrom cost more than it was worth—the temperature of cooking experiencing no diminution.

* Centigrade—equal to 212 F.

† 230° Fahrenheit.

‡ NOTE BY TRANSLATOR.—A mistake. They yield, even in Louisiana, about 65 per cent. of sugar. (860)

CULTIVATION OF THE VINE.

(Concluded from page 357.)

MANAGEMENT DURING THE SECOND YEAR.

—March 1.—Remove the covering, and fork up the surface of the ground, to the depth of two or three inches, that the sun and air may freely penetrate it. April 1.—Keep the soil round the roots free from weeds, and the surface of it loose, either by raking or forking it up as often as necessary. May 1.—Now remember that only a single shoot is permanently to be trained throughout the summer; the object of leaving two buds the previous autumn being to provide against the loss of a shoot in case of any accident. As soon, therefore, as the strongest has grown sufficiently to be out of danger of being accidentally rubbed off, the other is to be cut out, as hereafter directed. If any other shoots have pushed besides the two principal ones, rub them all off. As soon as the shoots have grown about a foot in length, nail them to the wall or fence, as the case may be. Do this very carefully, for they are as yet extremely tender. When they have grown about six inches from the last nailing, they must again be nailed, and continually kept so, never suffering the tops of the shoots to be blown about by the wind. As the tendrils and lateral shoots successively appear throughout the summer, pinch off the former when they have grown about three inches in length, and the latter to an inch beyond the first eye. June 1.—Throughout this month, and the two following ones, whenever the ground appears parched through by the heat of the weather, give the roots, once a day, about half a gallon of soap-suds, or dung-water. Keep the ground free from weeds, and the surface loose and open, by raking or forking it up once a week throughout the summer. July 1.—The young shoots being firmly united to the preceding year's wood, and therefore past all danger of being broken off by any accident, unmail the weakest shoot of the two and cut it out close to the stem, making the surface of the wound quite smooth and even. The remaining shoot must be kept nailed to the wall as before directed. November 1.—Cut the vine to the two lowermost buds, and in the winter, if the weather be frosty, cover the ground over in the same manner as in the preceding winter.

THIRD YEAR.—March 1.—The winter covering may now be removed, (provided there should be no hard frost,) and the surface of the ground must be made quite mellow by using lightly a garden fork or trowel, observing great care to avoid disturbing the roots, as they will now be found very near the surface. Let the subsequent treatment through-

out the season be precisely the same as in the preceding summer. If any fruit be shown, pinch it off as soon as it appears. November 1.—It is presumed the stem of the vine will now be more than two inches in girth, and therefore two leading shoots are to be permanently retained the next year. For this purpose, cut the vine down to the three lowermost buds, thus reserving one to spare, in case of accident. The vine will then resemble the adjoining figure. The roots being now sufficiently strong to withstand the severity of the weather, will not in future require covering.

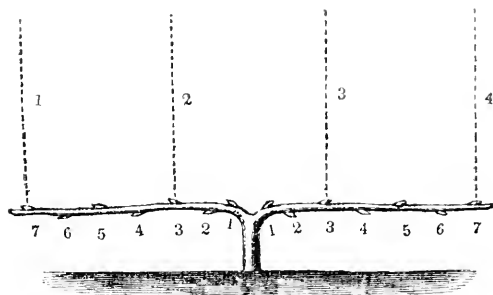


FOURTH YEAR.—March 1.—Clean the surface of the ground, and fork it up lightly, and let the subsequent management throughout the season be the same as before. May 1.—As soon as the shoots have grown a sufficient length, nail or tie them carefully to the wall or trellis, and rub off all the others, if any should have pushed. If fruit be shown, pinch it off as in the preceding year. July 1.—Unmail and cut out the weakest of the three shoots, and train the two remaining ones carefully during the remainder of the season. Sept. 1.—Pinch off the tops of the shoots. November 1.—As the girth of the stem will not be less now than three inches, the vine may be permitted to mature fruit the next year, not exceeding five pounds weight; for this purpose, cut down the two shoots to the seven lowermost buds each. Prune away the remaining portion of the tendrils and dead wood close to the shoots; and cut out carefully all the lateral shoots close to the base of the buds, whence they have sprung. If the outer bark of the stem be decayed, rub it off clean; and then nail or tie the shoots to the wall or trellis in a temporary manner.

FIFTH YEAR.—February 1.—As soon after this time as the weather is open, cut out of each shoot the first, second, fourth, fifth, and sixth buds; then bend the two shoots carefully down, and secure them in a horizontal position, similar to that represented by the shoots in the adjoining figure. March 1.—Clean the surface of the ground, and fork it up as in the preceding year. May 1.—Train the shoots that push from the buds 3 and 7, in the manner represented by the dotted lines 1, 2, 3, 4, and if more fruit shows than is equivalent to the weight before mentioned, the excess must be cut off when the berries are set. July 15.—Continue the same course of management as in the preceding year, and

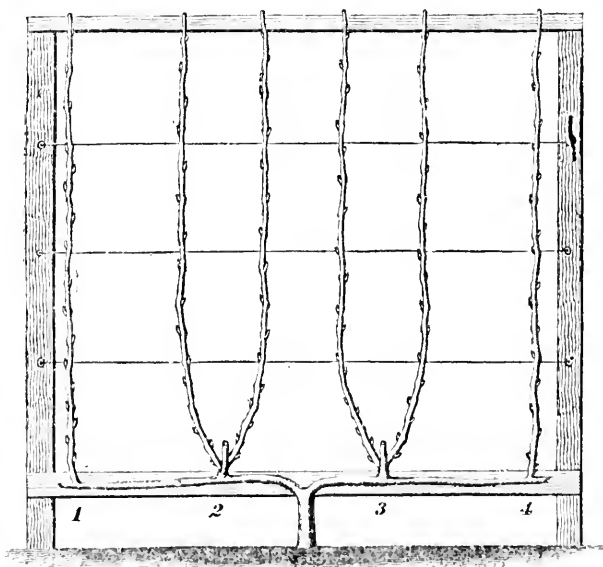
when the roots require watering, they are now sufficiently strong to have applied to them for that purpose any description of

liquid manure that can be most conveniently obtained. September 1.—Pinch off the tops of the shoots, and the sap will then accuau



late in the buds. Here we will leave our author, and pursue a somewhat different treatment. Early in October, or soon after the fruit is gathered, let the shoots numbered 1 and 4 be cut back to as many buds as may be deemed necessary to produce the quantity of fruit which the vine can mature the next year, and let those marked 2 and 3 be cut back to the three lowermost buds. The lateral shoots, as also the stumps of the tendrils, should be cut out as directed in the preceding year. Let the loose and decayed bark be rubbed or scraped off, and the shoots fastened to the wall or trellis, to protect them during the winter.

SIXTH YEAR.—Commence early in March, and treat the ground in every respect, during the season, as in the preceding year, taking care to incorporate all the leaves or clippings of the vines with the earth about the roots. Early in May, or as soon as the shoots numbered 2 and 3 have grown a sufficient length, fasten them carefully to the wall or trellis, and let them grow until the first of July. Then cut out the weakest of the three young shoots, and treat the two remaining ones (as indicated in the adjoining figure) precisely as those numbered 1 and 4 were the year preceding, due care being observed to deprive all the shoots of any superfluous fruit or leaves



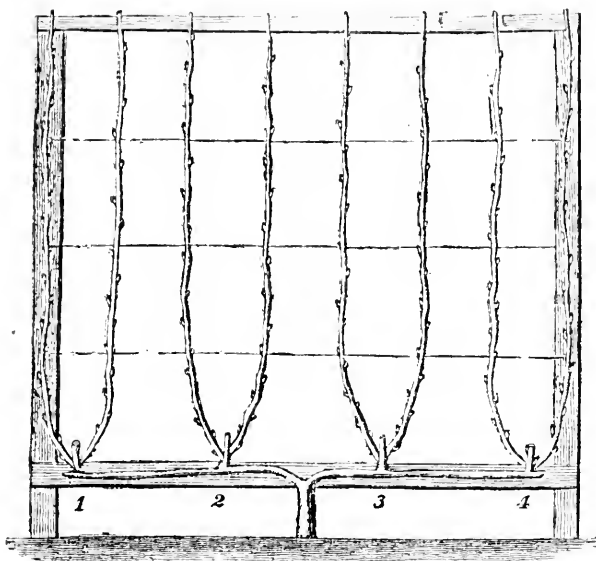
which may put forth. In October, soon after the fruit is gathered from the shoots numbered 1 and 4, cut them down to the three

lowermost buds, thus reserving one to spare in case of accident, in order to produce double shoots the following year. No farther

treatment will be required than rubbing or scraping off all loose and decayed bark from the vines, until the next spring.

SEVENTH YEAR AND SUBSEQUENT TREATMENT.—Commence early in the month of March, and treat the ground throughout the season as directed for the preceding year.

Early in May, or as soon as the shoots numbered 1 and 4 have attained a sufficient length, carefully fasten them to the wall or trellis, and let them grow until the first of July. Then cut out the weakest of the three young shoots, and treat the two remaining ones (indicated by 1 and 4 in the annexed figure) in



every respect as those numbered 2 and 3 were the year before. By the end of the 7th year, if the plant belongs to a vineyard, in which the vines are grown at the distance of six feet apart, it will have acquired a sufficient number of leading shoots to bear fruit in abundance. But if it be an isolated vine, the horizontal branches may be allowed to extend themselves, and a pair of new shoots added each year, as long as the fertility of the soil and the nature of the situation may require it. During every subsequent year, the treatment of the ground during spring and summer should be the same as in the two seasons preceding. Early in September, the tops of the young shoots should be pinched off, in order that the sap may be assimilated into buds; and in October, or soon after harvesting the grapes, cut back the shoots of the same year and leave but four eyes to each; as, by leaving too many, the vine becomes exhausted and yields but little fruit, and is soon destroyed by premature decay. The shoots should be cut off in an oblique direction, opposite to, and about an inch and a half above, the fourth eye from the old wood, in such a manner as will shed the rain and allow the buds to suffer no injury from the wet. In the course of the month of May, the vines should be examined and all the shoots from the old wood rubbed off; and if an eye of the last year's growth should be found to pro-

duce twin shoots, the weakest of the two must be removed, in order that the remaining one may the better thrive. In the course of the season, the superfluous leaves and twigs must often be thinned out; and about the first of September, as in the preceding years, pinch off the tops of the shoots, in order that the sap may assimilate in the buds that are to be reserved for the next year. If the vines appear to be too exuberant, they may be pruned at the roots, without injury, at any season of the year. The most convenient period, however, for performing this operation, where the climate is mild, is in November, when the roots should be exposed to the light and air, by drawing away the earth, and letting them remain till spring; but where the winters are severe, and subject to continued ice and frost, early in December they should be re-covered with earth, mixed with well-rotted manure, leaf-mould, husks and seeds of grapes, or the clippings and leaves of vines. If they remain exposed during winter, early in March the earth should be restored, and mixed with the manure or other substances, as named above. This mode was called "ablaqueatio" by the Romans, and is still practiced with advantage in some parts of Italy and Spain.

Although spring and summer pruning of the vine may advantageously be adopted in all countries of the globe, yet in places ex-

posed to the sun, with mild winters, pruning in autumn is thought to be the best, the most natural, at which fine trees and shrubs, by a divine and eternal law, drop both their fruit and leaves. "Snag pruning" is thought to be preferable by some, because, in "close pruning" the wounds spread, and prevent the protrusion of buds near the affected parts; but if these parts be covered at the time of pruning with a preparation of fine earth or white-lead, mixed with linseed oil, they will immediately heal.

Mr. Loudon, in treating of the vine, mentions three modes of pruning it in hot-houses, viz: the fruit-tree method, in which the plant is spread out in the manner of a fan, and trained like a common fruit tree; the long or young-wood method, in which all the wood above a year old is cut out down to the stool or stock; and the spurring-in method, in which the fruit is produced from young wood grown annually from the seeds of the main

shoot, or shoots of old wood. The last two methods he regards as the best.

It is customary with many to cultivate flowers, or vegetables of various kinds, between or near their vines, without reflecting that they are doing them great injury by abstracting their proper nourishment from the soil; a practice not only strictly guarded against by the most intelligent vine-dressers of the present day, but condemned by all ancient writers on the subject; and Moses, in exhorting the people of Israel, very forcibly elucidated his discourse by commanding them not to defile their vineyards with the fruit of divers seeds:

"Thou shalt not sow thy vineyard with divers seeds; lest the fruit of thy seed which thou hast sown, and the fruit of thy vineyard, be defiled."

DEUTERONOMY, xxii. 9.

Thus plainly showing that the wisdom and prudence of this important law was well understood even at that early day.

PRICES CURRENT.

[Corrected, February 24, for the Monthly Journal of Agriculture.]

| | | |
|---|-----------|--------------|
| ASHES—Pots, 1st sort..... | £ 100 lb. | 4 87½ @ — |
| Pearls, 1st sort, 46..... | | 5 56½ @ — |
| BEEHIVES—American Yellow..... | | 26½ @ — 27 |
| CANDLES—Mould, Tallow. £ lb..... | | 9 @ — 11 |
| Sperm, Eastern and City..... | | 28 @ — 38 |
| COTTON—From..... | £ lb. | 93 @ — 13 |
| COTTON BAGGING—American..... | | 11½ @ — 13 |
| CORDAGE—American..... | £ lb. | 11 @ — 12 |
| DOMESTIC GOODS—Shirtings, £ y..... | | 5 @ — 11 |
| Sheetings..... | | 7 @ — 15 |
| FEATHERS—American, live..... | | 27 @ — 30 |
| FLAX—American..... | | 7 @ — 8 |
| FLOUR & MEAL—Genesee, £ bbl..... | | 7 @ — |
| Troy..... | | 7 @ — |
| Michigan..... | | 6 87½ @ 7 |
| Ohio, Flat Hoop..... | | 6 87½ @ 7 |
| Ohio, Round Hoop..... | | — @ — |
| Ohio, via New-Orleans..... | | — @ — |
| Pennsylvania..... | | 6 75 @ — |
| Brandywine..... | | 6 75 @ — |
| Georgetown..... | | 6 75 @ — |
| Baltimore City Mills..... | | 6 75 @ — |
| Richmond City Mills..... | | — @ — |
| Richmond Country..... | | 6 75 @ — |
| Alexandria, Petersburg, &c..... | | 6 75 @ — |
| Rye Flour..... | | 5 @ — 5 25 |
| Corn Meal, Jersey and Brand..... | | 5 @ — 5 12½ |
| Corn Meal, Brandywine..... | hhd. | 22 @ — |
| GRAIN—Wheat, White..... | £ bush. | — @ 1 75 |
| Wheat, Western, Red..... | | 1 55 @ 1 60 |
| Rye, Northern..... | | 95 @ 1 — |
| Corn, Jersey and North..... | (meas.) | — @ 1 — |
| Corn, Southern..... | (measure) | — @ — |
| Corn, Southern..... | (weight) | — @ 1 — |
| Oats, Northern..... | | — @ — 50 |
| Oats, Jersey..... | | 42 @ — 44 |
| HAY—North River in bales, £ 100 lb..... | | 56½ @ — 62½ |
| HEMP—American, dew-rotted..... | ton 15 | @ 130 |
| " " water-rotted..... | 150 | @ 200 |
| HOPS—1st sort, 1846..... | | 9 @ — 11 |
| IRON—American Pig, No 1..... | | — @ 32 50 |
| " " Common..... | | 22 50 @ — 25 |
| LIME—Thomaston..... | £ bbl. | 70 @ — 75 |
| LUMBER—Boards, N.R., £ M. ft. cr..... | | 30 @ — 35 |
| Boards, Eastern Pine..... | | — @ — |
| Boards, Albany Pine..... | £ pce. | 10 @ — 18 |
| Timber, Georgia Pine..... | £ M. ft. | 27 50 @ — |

| | |
|---|--------------------------|
| Staves, White Oak, pipe, £ M..... | 50 @ — @ — |
| Staves, White Oak, lhd..... | 40 @ — @ — |
| Staves, White Oak, lhl..... | 30 @ — @ — |
| Staves, Red Oak, lhd..... | 24 @ — @ 28 |
| Hoops..... | 20 @ — @ 30 |
| Scantling, Pine, Eastern..... | — @ — |
| Scantling, Oak..... | — @ — |
| Timber, Oak..... | £ cubic foot — 20 @ — 30 |
| Timber, White Pine..... | 13 @ — 20 |
| Timber, Georgia Yellow Pine..... | 24 @ — 28 |
| Shingles..... | £ bunch 1 75 @ 2 — |
| Shingles, Cedar, 3 feet, 1st quality..... | 26 @ — @ — |
| Shingles, Cedar, 3 feet, 2d quality..... | 22 @ — @ 21 |
| Shingles, Cedar, 2 feet, 1st quality..... | 17 @ — @ 18 |
| Shingles, Cedar, 2 feet, 2d quality..... | 15 @ — @ 16 |
| Shingles, Cypress, 2 feet..... | 13 @ — @ 14 |
| Shingles, Company..... | 28 @ — @ 30 |
| MUSTARD—American..... | 16 @ — 31 |
| NAILS—Wrought, 6d to 20d..... | £ lb. 10 @ — 14 |
| Cut 4d to 40d..... | 44 @ — 47 |
| PLASTER PARIS—£ ton..... | — @ — |
| PROVISIONS—Beef, Mess, £ bbl..... | 10 50 @ 11 50 |
| Beef, Prime..... | 8 50 @ 9 25 |
| Pork, Mess, Ohio..... | 15 @ — @ — |
| Pork, Prime, Ohio..... | 12 75 @ 13 — |
| Lard, Ohio..... | £ lb. 10 @ — 11 |
| Hams, Pickled..... | 9 @ — 9½ |
| Shoulders, Pickled..... | 6½ @ — 6½ |
| Sides, Pickled..... | — @ — |
| Beef, Smoked..... | £ lb. 9½ @ — 10 |
| Butter, Orange County..... | 20 @ — 22 |
| Butter, Western Dairy..... | 14 @ — 16 |
| Butter, Grease..... | — @ — |
| Cheese, in casks and boxes..... | 7 @ — 7½ |
| SEEDS—Clover..... | £ lb. 8 @ — 9 |
| Timothy..... | £ tierce 20 @ — 25 |
| Flax, Rough..... | 11 @ — 11 25 |
| SOAP—N. York, Brown..... | £ lb. 31 @ — 54 |
| TALLOW—American Rendered..... | 8½ @ — 8½ |
| TOBACCO—Virginia..... | @ lb. 2 @ — 5 |
| North Carolina..... | 2 @ — 3 |
| Kentucky and Missouri..... | 2 @ — 6 |
| WOOL—Ann. Saxony, Fleeced..... | £ lb. 35 @ — 37½ |
| American Full Blood Merino..... | 32 @ — 34 |
| American ½ and ¾ Merino..... | 25 @ — 27 |
| American Native and ¾ Merino..... | 23 @ — 25 |
| Superfine, Pulled..... | 29 @ — 31 |

Philadelphia 10 Dec^r. 1798

Sir

Enclosed is the Copy of a letter which I had the honor to write you by a. Ship called the Suffolk; - unfortunately, as I have just been informed, Captured by the French. - As soon of my letters ever get out of their hands I have, that I may not appear inactive to the honor of your Correspondence forwarded a copy of it. - With great esteem & Respect

Yours Sir

Y^r Most Obed^t. Serv^t

Sir John Sinclair Bart

Very Hble Servant
G. Washington

MS. A. 1. 1. 1

MONTHLY JOURNAL OF AGRICULTURE.

VOL. II.

APRIL, 1847.

NO. 10.

WASHINGTON'S ACCOUNT OF THE AGRICULTURAL ADVANTAGES OF THE UNITED STATES IN 1796.

[Correspondence on Agriculture between Sir JOHN SINCLAIR and Gen. WASHINGTON.]

AN ACCOUNT OF THE CIRCUMSTANCES *which induced Sir JOHN SINCLAIR to apply to General WASHINGTON for information respecting the several States of North America, in the year 1796.*

*Edinburgh.
10th May 1821.*

“ AT the commencement of the year 1796, the aspect of public affairs in Great Britain became of the gloomiest description. Such was the success of the arms of France, and such the terror which they inspired, that the Continent seemed to be completely subdued ; while the affairs of Great Britain itself were so unsuccessfully conducted as to give rise to the most serious apprehensions, in the minds of many, that it could not much longer continue the contest. The Minister who then governed this country (the Right Honorable William Pitt) was endowed with extraordinary talents and almost unequalled powers of eloquence. He was much better calculated, however, to shine in a popular assembly than to conduct a war, *more especially in conjunction with other States*, whom it was necessary to manage, to conciliate, and to rouse to the greatest possible exertions. He had not, himself, acquired any knowledge of foreign nations, and he would not listen to the communications of those who wished to give him *true information* respecting their characters and views—how far they might be depended on, and what they were capable of effecting. For some years I had been in habits of great intimacy with him, during which period every suggestion transmitted by me for his consideration was almost uniformly attended to. But latterly, from an inordinate confidence in his own resources, an unwillingness to listen to *disagreeable truths*, (which an independent character felt it his duty to state, when any occasion required it,) and a dislike to those who would not be *completely subservient to him* on all occasions, he all at once altered so much his style of behavior toward me that our connection together was dissolved.

“ At that period of time, any person who did not believe in the *infallibility* of William Pitt was considered a species of public enemy. Disgusted with a nation which had thus submitted itself to the control of one individual, whom I considered in the light of a personal enemy, and seeing but little prospect that the country would be extricated from the difficulties in which it was involved, unless a different system was pursued, which was not very probable, I naturally thought it necessary to look out for an asylum for myself and family,

where we might live at a distance from the calamities of Europe, which seemed more likely to increase than to diminish. I was thence induced to apply to a most respectable correspondent (the President of the United States) to know what part of America was the most desirable as a place of residence for a British emigrant.

"This short narrative will explain to the reader the circumstances which led General Washington to transmit to me the following account of the several States of America. Owing to the difficulty, however, of removing a numerous family, and unwillingness to quit a country for which I had naturally a strong predilection, and whose commercial interests and agricultural prosperity I still hoped it might be in my power to promote, the plan of emigration to America was, after much deliberation, relinquished. This was attended with fortunate consequences to the country. The Minister was induced to adopt a measure recommended by me—that of issuing two millions of Exchequer bills, by the loan of which the commercial interest was saved from almost general bankruptcy—and soon afterward he supported with his influence the plan of instituting '*a Board of Agriculture*,' moved by me in the House of Commons, where it met with considerable opposition, but whose establishment (to which the support of the Minister certainly materially contributed) I trust will form an important era in the history of the first of arts.

"It is only necessary to add that, by various accidents, neither the original copy nor the duplicate of the subjoined letter reached me; but, fortunately, '*a triplicate*' was sent, which safely arrived. It was accompanied by a letter, in General Washington's hand-writing, which I thought it proper to have engraved, 'That, with an account of the United States of America, drawn up by that great statesman, every public-spirited native of America might have it in his power not only to possess himself, but to bequeath to his posterity '*the autograph*' of the founder of American Independence, and of one who is justly ranked among the greatest and most illustrious characters the world has hitherto produced.' "

John Sinclair⁵
 & Born 10th May 1754.

Answer.

LETTER FROM HIS EXCELLENCY GENERAL WASHINGTON, to the Right Honorable Sir JOHN SINCLAIR, Baronet, containing an account of the several States of America, as they appeared calculated for the residence of a British emigrant, in the year 1796.

[Triplicate.]

PHILADELPHIA, 11th Dec., 1796.

Sir: The near view which you have of the Revolution in France, and of the political state of things in Europe, especially those of Great Britain, has enabled you to form a judgment, with so much more accuracy than I could do, of the probable result of the perturbed state of the countries which compose that quarter of the globe, and of the principal actors on that theatre, that it would be presumptuous in me, at the distance of 3,000 miles, to give an opinion relatively to either men or measures: and therefore I will proceed to the information required in your private letter of the 11th of September, which I will give from the best knowledge I possess, and with the candor you have a right to expect from me.

The United States, as you well know, are very extensive—more than 1,500 miles between the north-eastern and south-western extremities—all parts of which, from the sea-board to the Apalachian Mountains, (which divide the eastern from the western waters,) are entirely settled, though not as compactly as they are capable of, and settlements are progressing rapidly beyond them.

Within so great a space, you are not to be told that there is great variety of climates; and you will readily suppose, too, that there are all sorts of land, differently improved and of various prices, according to the quality of the soil; its

contiguity to, or remoteness from, navigation ; the nature of the improvements ; and other local circumstances. These premises, however, are only sufficient for the formation of a general opinion, for there are material deviations, as I shall mention hereafter.

In the New-England States, and to Pennsylvania inclusively, landed property is more divided than it is in the States south of them. The farms are smaller, the buildings and other improvements, generally better, and of consequence the population is greater. But, then, the climate, especially to the eastward of Hudson River, is cold, the winters long, consuming a great part of the summer's labor in support of their stocks during the winter. Nevertheless, it is a country abounding in grass, and sells much fine beef, besides exporting many horses to the West Indies. A mildew or blight (I am speaking now of the New-England States particularly) prevents them from raising wheat adequate to their own consumption ; and of other grains they export little or none, fish being their staple. They live well, notwithstanding, and are a happy people. Their numbers are not augmented by foreign emigrants, yet from their circumscribed limits, compact situation, and natural population, they are filling the western parts of the State of New-York, and the country on the Ohio, with their own surplusage.

New-Jersey is a small State, and all parts of it, except the south-western, are pleasant, healthy, and productive of all kinds of grain, &c. Being surrounded on two sides by New-York, and on the other two by Delaware River and the Atlantic, it has no land of its own to supply the surplus of its population ; of course their emigrations are principally toward the Ohio.

Pennsylvania is a large State, and from the policy of its founder, and of the Government since, and especially from the celebrity of Philadelphia, has become the general receptacle of foreigners from all countries, and of all descriptions, many of whom soon take an active part in the politics of the State ; and coming over full of prejudices against their own Governments—some against all Governments—you will be enabled, without any comment of mine, to draw your own inference of their conduct.

Delaware is a very small State, the greater part of which lies low, and is supposed to be unhealthy. The eastern shore of Maryland is similar thereto. The lands in both, however, are good.

But the western parts of the last-mentioned State, and of Virginia, quite to the line of North Carolina, above tide water, and more especially above the Blue Mountains, are similar to those of Pennsylvania between the Susquehanna and Potomac Rivers, in soil, climate and productions, and, in my opinion, will be considered, if it is not considered so already, as the garden of America ; forasmuch as it lies between the two extremes of heat and cold, partaking in a degree of the advantages of both, without feeling much the inconveniences of either, and with truth it may be said, is among the most fertile lands in America, east of the Apalachian Mountains.

The uplands of North and South Carolina and Georgia are not dissimilar in soil, but as they approach the lower latitudes, are less congenial to wheat, and are supposed to be proportionally more unhealthy. Toward the sea-board of all the Southern States, (and farther south the more so,) the country is low, sandy, and unhealthy ; for which reason I shall say little concerning them : for, as I should not choose to be an inhabitant of them myself, I ought not to say anything that would induce others to be so.

This general description is furnished, that you may be enabled to form an idea of the *part* of the United States which would be most congenial to your inclination. To pronounce with any degree of precision what lands could be obtained for in the parts I have enumerated, is next to impossible, for the reasons I have before assigned ; but upon pretty good data it may be said that those in Pennsylvania are higher than those in Maryland, (and I believe in any other State,) declining in price as you go southerly, until the rice-swamps of South Carolina and Georgia are met with, and those are as much above the medium in price as they are below it in health. I understand, however, that from 30 to 40 dollars per acre (I fix on dollars because they apply equally to *all* the States, and because their relative value to sterling is well understood) may be denominated the medium price in the vicinity of the Susquehanna, in the State of Pennsylvania ; from 20 to 30 on the Potomac, in what is called the valley—that is, lying

between the North Mountain and the Blue Mountain, which are the richest lands we have, and less, as I have noticed before, as you proceed southerly. But what may appear singular, and was alluded to in the former part of this letter, the lands in the parts of which I am now speaking, on and contiguous to tide-water, (with local exceptions,) are in lower estimation than those which are above and more remote from navigation. The causes, however, are apparent—1. The land is better; 2. Higher and more healthy; 3. They are chiefly, if not altogether, in the occupation of farmers; 4. From a combination of all of them, purchasers are attracted, and of consequence the price rises in proportion to the demand.

The rise in the value of landed property, in this country, has been progressive ever since my attention has been turned to the subject, (now more than 40 years,) but for the last three or four of that period it has increased beyond all calculation; owing it part to the attachment to, and the confidence which the people are beginning to place in their form of Government, and to the prosperity of the country from a variety of concurring causes—none more than to the late high prices of its produce.

From what I have said, you will have perceived that the present prices of land in Pennsylvania are higher than they are in Maryland and Virginia, although they are not of superior quality. Two reasons have already been assigned for this: first, that in the settled part of it the land is divided into smaller farms, and more improved; and, secondly, being in a greater degree than any other the receptacle of emigrants, these receive the first impressions in Philadelphia, and rarely look beyond the limits of the State: but besides these, two other causes not a little operative may be added, namely, that until Congress passed general laws, relative to naturalization and citizenship, foreigners found it easier to obtain the privileges announced to them in that State than elsewhere; and because there are laws here for the gradual abolition of slavery, which neither of the two States above mentioned have at present, but which nothing is more certain than that they must have, and at a period not remote.

Notwithstanding these obstacles, and although I may incur the charge of partiality in hazarding such an opinion, at *this time*, I do not hesitate to pronounce that the lands on the waters of Potomac will in a few years be in greater demand and in higher estimation than in any other part of the United States. But as I ought not to advance this doctrine without assigning reasons for it, I will request you to examine a general map of the United States, and the following facts will strike you at first view: That they lie in the most temperate latitude of the United States; that the main river runs in a direct course to the expanded part of the western country, and approximates nearer to the principal branches of the Ohio than any other eastern water, and of course must become a great, if not (under all circumstances) the best highway into that region; that the upper seaport of the Potomac is considerably nearer to a large portion of the State of Pennsylvania than that portion is to Philadelphia, besides accommodating the settlers thereof with inland navigation for more than 200 miles: that the amazing extent of tide navigation afforded by the bay and rivers of Chesapeake has scarcely a parallel. When to these are added, that a site at the junction of the inland and tide navigations of that river is chosen for the permanent seat of the General Government, and is in rapid preparation for its reception; that the inland navigation of the river is nearly completed to the extent above mentioned; that its lateral branches are capable of great improvement at a small expense, through the most fertile parts of Virginia, in a southerly direction, and crossing Maryland and extending into Pennsylvania in a northerly one, through which (independent of what may come from the western country) an immensity of produce will be water-borne, thereby making the Federal city the great emporium of the United States—I say when these things are taken into consideration, I am under no apprehension of having the opinion I have given relative to the value of land on Potomac controverted by impartial men.

There are farms always and everywhere for sale; if, therefore, events should induce you to cast an eye toward America, there need be no apprehension of your being accommodated to your liking; and if I could be made useful to you therein, you might command my services with the greatest freedom.

Within full view of Mount Vernon, separated therefrom by water only, is one

of the most beautiful seats on the river, for sale, but of greater magnitude than you seem to have contemplated. It is called Belvoir, and did belong to George William Fairfax, Esq., who, was he living, would now be Baron of Cameron, as his younger brother in this country (George William dying without issue) at present is, though he does not take on himself the title.

This seat was the residence of the above named gentleman before he went to England, and was accommodated with very good buildings, which were burned soon after he left them. There are near 2,000 acres of land belonging to the tract, surrounded in a manner by water. The mansion-house stood on high and commanding ground. The soil is not of the first quality, but a considerable part of it lying level may, with proper management, be profitably cultivated. There are some small tenements on the estate, but the greater part thereof is in wood. At present it belongs to Ferdinando Fairfax, son of Bryan Fairfax, the gentleman who will not, as I said before, take upon himself the title of Baron of Cameron. A year or two ago the price he fixed on the land was (as I have been informed) 33½ dollars per acre; whether not getting that sum, or whether he is no longer disposed to sell it, I am unable with precision to say; for I have heard nothing concerning his intentions lately.

With respect to the tenements I have offered to let, appertaining to my Mount Vernon estate, I can give no better description of them and of their appurtenances, than what is contained in the printed advertisement herewith inclosed; but, that you may have a more distinct view of the farms, and their relative situation to the mansion-house, a sketch from actual survey is also inclosed; annexed to which I have given you, from memory, the relative situation and form of the seat at Belvoir.

The terms on which I had authorized the superintendent of my concerns at Mount Vernon to lease the farms there, are also inclosed; which, with the other papers and the general information herein detailed, will throw all the light I am enabled to give you upon the subject of your inquiry. To have such a tenant as Sir John Sinclair, however desirable it might be, is an honor I dare not hope for; and to alienate any part of the fee-simple estate of Mount Vernon is a measure I am not inclined to, as all the farms are connected and parts of a whole.

With very great esteem and respect I have the honor to be, Sir,

Your most obedient and obliged hble servant,

G. WASHINGTON.

P. S. As I shall have an opportunity in the course of the present Session of Congress to converse with the members thereof from different States, and different parts of each State, I will write you a supplementary account, if essential information should be obtained in addition to, or corrective of, what is given to you in the foregoing sheets.

The first public allusion to the preceding correspondence, between the founder and first President of the British Board of Agriculture and the illustrious Farmer of Mount Vernon, is to be found in a letter addressed by the former to the Editor, then of the American Farmer, and now of this journal. It was published in the former paper twenty-six years ago—nearly two years after its establishment.

In that letter he says: "I think it right to add, that owing to some peculiar circumstances, I have in my possession a description of the States of America drawn up by the '*illustrious Washington*' himself. I have some thoughts of publishing that most valuable and curious document, that every true American may be able to possess an account of his native country, from the pen and sanctioned by the signature of '*its greatest ornament*.'"

With the names of SINCLAIR and WASHINGTON there are associations too interesting to every true patriot and friend of Agriculture, to make any apology necessary for appropriating to these documents, now more than fifty years old, the space we have assigned them—even though, as may be admitted, they may not directly conduce to any sheerly profitable result, which some would contend everything should do which is offered for perusal to practical Farmers. As if

they alone of all creation, whose physical labors are the most incessant, should have neither relish nor opportunity for any intellectual recreation.

In the course of their subsequent correspondence, on topics mutually engaging, Sir John Sinclair sent to Mr. Skinner what purports to be a fac-simile copy of Gen. Washington's letter, together with an *original* letter, of which our publishers have here given a fac-simile. With these, the Baronet sent also his own original and interesting "statement of the circumstances" which led to his reception of the Washington letter. This statement is now published, probably, for the first time, though the letter, we believe, is in Sparks's Collection. With these documents came the sketch of a *Monument*, which it was proposed to have erected to Washington at *Caithness*, Scotland. Sir John Sinclair evidently anticipated that the proceeds from the sale of these documents to Americans would be very considerable, as he recommended them to be printed in an attractive form, and the type to be "kept standing."—"The inclosed letter should be printed in a large type, so as to fill as large a space as possible—the press should be kept standing, so as to supply any demand." It seems somewhat strange that he did not suggest or allude to its being stereotyped, since that process had been perfected and brought into general use twenty years before; and the more so, as among the most prominent in this great improvement, were artists *Ged, Tulloch* and *Foulis*, of Edinburgh and Glasgow, in his own country.

It was the expressed wish of the venerable Baronet, that the publication should be dedicated, if his permission could be had, to that eminently pure patriot, Col. MONROE, then President of the United States, with whom he claimed to be distantly related.

For certain reasons, the project of the publication was not carried out.

It is not a little curious now, after the lapse of more than half a century, to compare the state and prospects of the country, as they then appeared in the view of General Washington, with its subsequent unparalleled growth in population and extension to—the Lord only knows where!

Not without significance is his remark in the close of his sketch of Pennsylvania. Not foreseeing the effect of the public works, on which the great and ever-swelling tide of European emigration is now floated on to the great, cheap, fertile, and illimitable West, his anticipations for Western Virginia were very natural; and but for the forecast and influence of BAYARD, and CLINTON, and VAN RENSSELAER, and their powerful associates, in opening the "big Ditch," his predictions for the Old Dominion would ere this have been measurably fulfilled. Nor are we sure that those who have gone farther have not fared worse than if they had settled there, "above the Blue mountains, between the two extremes of heat and cold." What glorious fields that old Mother of States has kept, and still keeps open, for every industrial enterprise! Can nothing break the malign spell, whatever it be, that keeps them from being occupied? If by a unanimous vote, in the fervor of her well-tried patriotism, she can bestow \$10,000 to fit out a single Federal regiment, for distant wars, can she not find an equal sum for the establishment of a *Normal School of Agriculture*, at the seat of her Government, in which the Youth of the State might be prepared to develop her rich resources, by being thoroughly instructed in natural and mechanical philosophy, chemistry, geology, mineralogy, animal and vegetable physiology, civil engineering, practical surveying, and rural architecture of all descriptions? But alas!—

As to what the General says of the Southern States, then extending only to

the southern line of Georgia: "As I would not choose to be an inhabitant of them myself, I ought not to say anything that would induce others to be so"—doubtless he thought as he spoke; but where in this country of ours, which is fast getting to be "some," is there such a delicious climate for three-fourths of the year? so genial! so hospitable! And then, such a people—true descendants of the Cavalier stock—with hearts warm and generous as their clime; and as for their *women*!—what lighted up so brightly the darkest periods of the Revolution, as the fortitude and humanity of Southern matrons?

So well did Washington's ablest coadjutor think of the South, after years of marching and counter-marching, fighting and running and fighting again, in sunshine and in rain, that he, the "*Quaker*" General, GREENE, chose it for his permanent residence. True, he died there; and do not men die everywhere? Are we not told that "*all flesh is as grass*?"

The last reason assigned by WASHINGTON for the higher price of land in Pennsylvania, than in Maryland and Virginia, will not fail to attract the notice of the observant reader, and is as true now as it was then: "And because there are laws there for the gradual abolition of Slavery, which neither of the two States above mentioned have at present, but which nothing is more certain than that they must have, and at a period not remote." Such was the opinion, not only of Washington, but of Marshall, of Jefferson, and Madison and Monroe, and all the brightest luminaries in those brightest days of this Republic. Let the inquirer who would know why it is that his prophecies have not been fulfilled, ask those fanatical reformers, who in all ages have allowed their zeal to outrun all discretion. But has it not been said, time out of mind, that where God sends meat, there the Devil is sure to send cooks?

That his anticipations in respect of the lands on the tributaries of the Chesapeake would have been realized, if at a time then "not remote" Slavery had been removed from the State, many of the best informed of his countrymen still believe; for what portions of this Union can be compared with Delaware, Maryland and Virginia, for climate and facilities to bring forward their products in advance of all other places of equal contiguity to domestic markets, and open at all seasons to the ocean, to take advantage of all favorable changes in the markets abroad? But the fact is, that slave-labor cannot be *profitably* employed in alliance with *grain* staples! Where the crops are to be labored almost the entire year, and where to some of its processes every species of force may be applied, so that nearly every consumer is also a worker—sustenance and production thus going hand in hand—the case is quite different; and in no agricultural field is the labor of a given number of operatives applied with more system, exactness, efficiency and profit, than on large *plantation estates*. But we only meant to explain the "circumstances" under which this correspondence came into our possession, and not to comment on it. The "statement" of the great founder of the renowned Board of Agriculture is, we believe, both original and curious in its items of history, political and biographical. But as for the idea of a perishable pile of stone and mortar in memory of one whose renown is but compacted and polished by the hand of Time, that destroyeth all things else, types and history may be safely left to do their office. While these can speak, his name will be carried down with increasing admiration to posterity. The very vices of succeeding ages will increase its lustre.

JUDGE BUEL AND EDMUND RUFFIN.

THE Editor of THE FARMERS' LIBRARY, with due deference, suggests to the NEW-YORK STATE AGRICULTURAL SOCIETY the propriety of awarding every year, for some important and worthy display of agricultural excellence, a suitable and characteristic premium, to be known and contended for, as the

BUEL PREMIUM.

While gold medals, and costly swords, and elevated rank are bestowed by the wise men of the nation out of the public funds, for distinguished success in fields of battle and blood ; and gallant men are stimulated to excellence in that way, by the public bestowal of magnificent rewards, high pay, and merited honors for themselves and pensions for their families ; would it be out of place, we ask it most respectfully, in you, who are appointed to watch over the landed interest, to offer every year your leading premium in honor of him who labored so long, so zealously, and with so much effect, to turn the minds of the young generation to ways of peace and usefulness : and to look on Agriculture not as a mean drudgery, in which any clown might succeed with strong back and strong arms, but as a business demanding high and varied mental attainments, and eminently conducive to private and public morals ?

The object might be for the best cultivated farm, or a labor-saving implement or machine, displaying something *new* and economical in its construction. Anything but the fattest hog, or the heaviest half-acre of corn or carrots, or the fattest bullock or biggest turnips ; unless the animal or the vegetable be reared on some new and, hitherto, untried food, or new mode of preparing it, constituting altogether a *novel and useful discovery in rural economy*. And as Mr. RUFFIN—whose works have been deemed worthy of being pirated on the other side of the great water—does not live in the State, but has added immensely to American agricultural literature and products, it would, we most respectfully suggest, evince a commendable liberality and enlarged views to offer a similar premium, to be called the

RUFFIN PREMIUM.

If Agriculturists would have their calling respected, let them lose no occasion to *stand up for themselves*. We respectfully submit the same suggestion to the American Institute, that being, in its very name, a national institution.

Each might offer premiums, too, to be called after their *successive Presidents*. It would seem to be but a fit compliment to those who must be presumed to have risen entirely by their usefulness and liberality, to the head of such institutions.

There might also be the *Van Rensselaer*, and the *Clinton*, and the *Wadsworth* medals, for these were all great promoters of education and agricultural improvements. As nothing is to be expected from Government to reward or honor great promoters of industrial pursuits, let societies use every occasion to make their names honorably familiar to posterity, if only to excite emulation. What was the fate of ROBERT MORRIS, without whose *financiering* there could have been no fighting ?—The man to whose financial operations the Americans were said to owe as much as to the negotiations of Franklin, or even the arms of Washington, was allowed by his country to pass the latter years of his life in prison—*confined for debt !*

MASSACHUSETTS AGRICULTURE.

ESSEX COUNTY.

Plowing with Double Teams—Single Teams—Subsoil-Plowing—Working Oxen—Milch Cows and Heifers—
The Dairy.

HAVING in a previous number given some account of the last doings of the old Massachusetts State Society, we come now to the *Abstract* of the proceedings of the County Societies, as exhibited by the returns of their officers, under the law requiring them to make report to the office of the Secretary of State, not only of what disposition they have made and propose to make of the funds derived from the State, but to “accompany the same with such general observations concerning the state of Agriculture and manufactures in the State as they may deem important or useful.”

We stop a moment to remark, that even here the Agricultural Society is *charged* to look after another interest besides its own—“concerning the state of Agriculture and manufactures.” Now to this we are entering no objection, but in all the annals of industrial associations, have we ever seen a manufacturing, or commercial, or mechanical association charged by the law-making power to look *after Agriculture*? Well, let that pass! It is from these Reports and observations that we select what follows, being guided by what it is supposed may be most generally acceptable and useful, if not new, more particularly to readers without than within that venerable Commonwealth—a Commonwealth of which Mr. Colman has beautifully and truly written: “Let the children of Massachusetts, then, love and honor their good old Mother. Her soil may be hard, but labor compels it to be bountiful. Her climate may be harsh, but it gives strength and elasticity to the muscles, and the brightness of its own stars to the mind. Her voice in winter may be sometimes hoarse, and her face wrinkled and frowning; but her children will not love her the less for a sternness of discipline by which she trains them up in habits of unremitting labor and self-dependence, and thus qualifies them to be blessings and ornaments of their own community, the substantial pillars of the federal edifice, and the pioneers of learning, civilization, humanity and religion in the boundless West.” And first, of the

ESSEX COUNTY SOCIETY.

Whose Report is said to be the “most complete,” that Society having from its long experience in publishing annually a volume of its transactions, attained a high rank in the fullness of its Reports and the exactness of its statements.

PLOWING WITH DOUBLE TEAMS.—At the Cattle-Show, Sept. 24, 1845, there were thirteen competitors, and the quarter of an acre assigned to each was to be plowed not *less than seven inches deep*, and was done in from thirty-five to forty minutes. Notwithstanding, say the Committee of Judges, (who in Massachusetts are themselves many of them habituated to the use of the plow,) these trials have been so often repeated, (more than twenty years,) they are still received with increasing interest, and (listen, you of the stand-still school,) “*every succeeding year brings to notice some valuable improvement.*” Now how, but by being *printed*, and thus taking the form of that “book knowledge” so much

sneered at, would these "*improvements*" which "every year brings to notice," get to be widely known and available?

The Committee proceed to remark, that they are strongly impressed with the superior value of those plows which lay the furrow-slice *flat* and even, especially in the cultivation of grass. The trials which we have witnessed in Massachusetts have generally been in tough old sward-land. The harrow is afterward brought into play. It fills up all the chinks, makes smooth work, and the succeeding crop is planted or sowed on the sod thus inverted, without disturbing it; and as the grass and its roots perish and rot, the succeeding crop gets the whole benefit.

PLOWING WITH SINGLE TEAMS.—The experiments detailed go to show that an acre of land may be plowed by a single yoke of cattle and one man in four hours, and "probably nearly two acres in a day." The Committee ask whether it would not be better when two pair are employed instead of one, to use them separately, applying the second pair to a *subsoil*-plow to follow the first one. This must somewhat depend on the depth of the *soil*. In Worcester County, where this whole business is as well understood as in any part of the world, the premiums are limited to *one* pair of cattle without a driver. By driver is meant, not the plowman, but one who attends him to lead and urge forward the team. A plowing-match at Worcester is the most beautiful and impressive of all agricultural operations. Nothing can exceed the quiet self-possession, calmness and docility of the plowman and his team. It is indeed to be remarked of the ox that he never commits the blunder of going to the right when ordered to the left, or *vice versa*. His instincts are infallible.

SUBSOIL-PLOWING.—The only entry of subsoil-plows was made by BENJAMIN POOR, of Indian Hill farm, West Newbury, and distinguished as the winner of the premium for the best cultivated farm in the State submitted for inspection—an honor that in any highly enlightened and virtuous Republic, would win higher social and political reward than the most triumphant success on the ensanguined field of battle. The Society acknowledged their obligations for being often indebted to Mr. P. for contributions to its Shows.

The Committee close their Report with the general remark: "Farmers everywhere, who have tried subsoil-plowing, concur in representing it as beneficial in draining wet lands, and in counteracting the effects of drouth on dry soils; and your Committee believe its advantages will be made apparent to all who will make a trial of it."

WORKING OXEN.—This term in Massachusetts seems to be applied, where premiums are offered, exclusively to oxen working in carts, hauling heavy loads to test their strength. It is only where oxen are so almost exclusively used that men get to be versed in the niceties that come into consideration in awarding premiums to the best.

The highest premium was awarded to "Jonathan Berry, Jr., of Middletown, for his speckled-face cattle, *five years old*." They were "large of their age, well formed, not full in flesh, well matched as to temper, and well trained for *cattle of that age*." One important point is, that they should work "even and true."

MILCH COWS AND HEIFERS.—All that were entered for premiums were of "native breed." The first premium was awarded to HENRY CRESSY for a cow six years old, and as readers generally may be curious to know some particulars of a premium cow in old Essex, Massachusetts, Hon. *Timothy Pickering's county*,

we give Mr. Cressy's statement: "She calved 21st May, and gave milk as follows:

| | | |
|-----------------------------------|------|------------------|
| From May 21 to June 21 | Milk | 1,469 lbs. 4 oz. |
| " June 21 to July 21 | " | 1,264 " 8 " |
| " July 21 to August 21 | " | 1,127 " 8 " |
| " August 21 to September 21 | " | 956 " 8 " |
| Total in four months | " | 4,817 lbs. 4 oz. |

Mr. Cressy says he sold most of her milk, but he found by experiment that 19 pounds of it would yield one pound of butter. At that rate, she would have yielded in the four months 253 pounds of butter, or something more than two pounds a day. He stated as to her keeping, that it had been "good grass feed, with the exception of seven weeks, when she had two quarts of shorts per day." How much more valuable such a cow, so fed or pastured, than half a dozen such as we have in many of the States, which in summer yield a scanty supply of butter, and in winter give scarcely cream enough for their coffee! Nothing *pays better*, in the whole round of domestic economy, than a *little extra feed* and care, shelter and shorts, with a *dust of Indian meal*, to a *good cow*.

MR. WARREN AVERILL took the second premium. His cow was six years old. She calved 21st April. The calf was kept to 13th May. With what milk "the calf left" until that time, and all afterward to 20th May, one month, she produced *twenty pounds eight ounces of butter*. In the four succeeding months she gave 4,375 pounds of milk, that yielded 211 lbs. 2 oz. butter; being something more than twenty pounds of milk to one of butter. Her feed was pasture only, except from 30th of August, when he began giving her 1 quart of Indian and 1 quart of rye meal every night.

WILLIAM WILLIAMS took the third premium for a cow whose calf he sold for \$10 at 6 weeks and 3 days old; and during these six weeks he sold 52 quarts of milk and got $7\frac{1}{2}$ lbs. of butter from her. She gave, from the time the calf was taken from her, from 14 to 15 quarts of milk a day for a few days over four months. She calved 6th Feb., 1845, and on the 23d Sept. she was giving 8 quarts a day. Her keep was salt hay until she calved; then one feed of "English hay," at noon, and half a bushel of carrots per day for two months; after that no carrots, but one food of English hay at noon, and salt hay night and morning until "pasture time." "The first two weeks after she calved she gave 10 qts. of milk daily more than the calf could suck." P. S. She made 9 lbs. of butter per week till pasture time; then the milk was put with that of the rest of my cows."

The reader may here see how valuable is even one cow in a family, when of good quality and *well kept*; but these "pastures" in Massachusetts are generally well set in old English grass, one acre of it bearing more milk-producing grass than six of ordinary pasture in some other old States. How valuable will "The Cow Book" prove, in process of time, to all who thus rely on the cow for the sustenance of their families and for a portion of their income, supposing the signs laid down in it to prove as infallible as they have been found by Mr. Brooks, a practical farmer of the highest respectability, whose letter we published, and whose testimony has been corroborated by several others who, without going so much into detail, have assured us that with this book in hand they have tested the theory far enough to have no fear of being imposed on with an indifferent cow. As we desire in all cases to arrive at the exact truth, we respectfully request that the Trustees of all Societies would place *The Cow Book* in the hands of their Committees appointed to award premiums, with instructions to see how

far the theory is borne out. Should this fall under the eye of Mr. PHINNEY, we take leave to ask the favor of him to apply the signs to the imported and other cows, when convenient. The book is in great demand in the Eastern States.

And now, having got through with the ESSEX PREMIUM COWS, and shown to our southern friends "what they are like," we proceed to the Report

ON THE DAIRY.—Premiums were awarded for 1st, 2d and 3d best *June* butter, and same for *September* butter. As the reader may be curious to know the process and the quantity, we will give the statements of the two gentlemen who took the first prize in each case. Although other processes may be as good, it is fair to presume those to be at least equal to the best, who, following them, took the highest premium, for quality and quantity combined. Thus, as to the June butter, we give GEORGE W. DODGE's statement:

GEORGE W. DODGE'S STATEMENT.

I present for your inspection one box of June butter, containing 25 lbs., being a specimen of 132 lbs. made between the 1st of June and the 9th of July, from 5 cows; also, 2 boxes of September butter, containing 27 lbs., being a specimen of 405 lbs. made between the 20th of May and the 20th of September, from the same cows. Their feed has been common pasture until August; since then, the pasture being very poor and dry, we have fed them night and morning with green corn fodder, which was raised for the purpose.

PROCESS OF MAKING.—The milk is strained into tin pans, where it stands from 36 to 48 hours. It is then skimmed and the cream put into tin pails, standing on the bottom of

the cellar; a little salt is put into the pails before putting in the cream, which, at the times of addition, is stirred. We churn twice a week. The buttermilk is thoroughly worked out by hand, no water being used for that purpose. In warm weather, the cream is lowered into the well the night before churning. Immediately after the buttermilk is worked out, the butter is salted with an ounce of ground rock-salt to the pound, and in about 24 hours it is again worked over.

N. B. The June butter is packed down in layers of five pounds each, and salt sprinkled between; the top is covered with salt, and the pot is set on the bottom of the cellar.

Wenham, Sept. 21, 1845.

For the *September butter* the first premium was awarded to WARREN AVERILL, Esq. It will be observed that in one case the buttermilk is worked out by *hand*, and in the other *washed* out with water, so that this long mooted point is yet in abeyance:

WARREN AVERILL'S STATEMENT.

I offer for your inspection one pot and box of September butter, containing 32 lbs., being a specimen of 211 lbs. 2 oz. made from one cow since the 20th day of May until the 29th day of September, inclusive.

PROCESS OF MAKING.—The milk is strained into tin pans, and stands from 24 to 36 hours in a cellar, when the cream is taken off and put into a tin pail. We churn the first part of the season, once in four days; the latter part, once a week. The cream is brought from the cellar in the morning, and strained through a cloth into the churn. After it is churned, (which has taken, on an average, seven minutes,) the butter is taken out of the churn, put into an earthen pan, and water put with it. This is repeated until the butter-

milk is thoroughly rinsed from the butter, so that there is scarcely any color in the water. The butter is then worked over. Then it is put into an earthen pan, and salted with one ounce of salt to a pound of butter. It is then worked over again thoroughly, piece by piece, then made into balls and put into the cellar, fit for market.

I keep two cows, Flora and Kendall.—Flora I keep for butter; Kendall I keep for milk to sell, and use in the family. Flora has made 211 lbs. 2 oz. of butter since the 20th day of May to the 20th day of September, inclusive.

Ipswich, Sept. 23, 1845.

Note.—The manner of keeping the above cow and her yield of milk are given in a preceding statement.

Among other branches that remain to be touched upon to show what is deemed the right thing in New-England, we shall have to present from this Abstract notices of Meadow and Swamp Lands—Premium Farms—Fruit Trees—Lime—Fences, and Vegetables.

FARMERS' CLUB IN FAIRFAX COUNTY, VIRGINIA.

SETTLEMENT OF NORTHERN FARMERS IN THAT REGION.

HAVING heard contradictory accounts of the progress of emigration from the North into Fairfax County, Virginia, and very different statements as to the success of the movement, and whether their northern systems and habits had been maintained and become contagious in their new abodes, or whether they had laid them down and taken up those of the sons and daughters of the Old Dominion, we have been anxious to make personal observation to ascertain the exact "state of the case"—more especially as it would have afforded the occasion for brightening the chain of affection with some old friends in that quarter; but so far we have found it impossible to find time enough to gratify our wishes in that respect. Aware that a gentleman from New-York, every way reliable, respected wherever known and well qualified to give the information, had joined the settlers from that State, we addressed him a letter, of which we have no copy, but the tenor and purport of it may be easily inferred from the contents of the following:

J. S. SKINNER, Esq.

LAKE BORGNE PLACE, PROSPECT HILL, Fairfax Co., Va., 15th Jan. 1847.

Dear Sir: In part compliance with the request contained in your letter of the 5th inst., I transmit you herewith a condensed outline of the Constitution of the Farmers' Association formed in our neighborhood, and a general sketch of the progress and results of northern and eastern emigration to this portion of Virginia, so far as I have been able to collect the same.

1. The general objects of our Association are declared to be "the acquisition and diffusion of useful and practical knowledge in reference to agricultural science; the most approved and successful modes of farm husbandry in all its departments; the most profitable, judicious and economical application of labor and capital in tilling the soil; and the general relation and connection of physical, moral, political and social science with agricultural improvement." Its officers consist of a President, two Vice Presidents, a Corresponding and Recording Secretary, a Treasurer and Librarian; together with a Standing Committee of three, charged with the selection and arrangement of topics for discussion and the obtaining of occasional lecturers, &c. The meetings are held monthly, and in the evening; the officers are annually elected; and the topics for discussion are taken up in their order as reported from time to time by the Committee, and may be preceded or followed by resolutions embracing the sense of the Association, or of the member presenting them, on the subject matter under consideration. The payment of fifty cents on subscribing the Constitution, and the same amount quarterly thereafter, constitutes the sole condition of membership.

2. In reference to "the number of actual settlers from the North within a given number of years, the quantity of land each has purchased, and the prices given"—I am not prepared, at this time, to furnish you with that full and accurate statistical information which I hope to be able at a future period to accomplish through the agency of investigation to be set on foot by our Association. By information, however, derived from the very intelligent Clerk of our County Court, S. M. Ball, Esq., and from other reliable sources, I am enabled to state that not less than two hundred families have removed into this single county from the Northern and Eastern States within the past five years, and are now domesticated here, without the remotest intention, wish, or desire, so far as I can learn, to "take the back track"—that upward of \$200,000 in the aggregate have been invested by them in the purchase of land for farming purposes; and that the amount paid per acre for such land would not exceed, on an average, from \$5 to \$8. The highest price ascertained to be paid is \$26 for an improved farm of two hundred acres, with buildings originally costing \$7,000, and the present value of which could not fall short of \$4,000. Lands of the best quality, with ordinary improvements, may be obtained at prices varying

from \$10 to \$20 per acre, and large tracts of unimproved, but naturally fertile soils, are in market for from \$2 to \$5 per acre. The quantity of land taken up by the settlers respectively, varies greatly, many purchasing from five hundred to a thousand, and even two thousand acres, with a view to future speculation; and others being governed in this respect by their means, their peculiar views of farming operations, and their probable prospects of realizing compensating profits on the capital and labor invested. Probably the greatest number of settlers have contented themselves with from one hundred to one hundred and fifty acres, although there are several with twenty-five, thirty, forty and fifty acres, who find themselves "well to do in the world" with these humble allotments, and who contrive by a thorough and systematic cultivation of every portion of their domains to compensate for their limited area when compared with that of their neighbors.

3. With regard to the average products of these lands, and their comparative productiveness under their former and present owners, I am not in possession of sufficient means of information to speak with any certainty; and probably a sufficient length of time has not yet elapsed since the change to afford the requisite materials for determining this point. In the greater number of instances, I am inclined to the opinion that an injudicious and exhausting process of tillage, unaccompanied by the application of fertilizing manures, has rendered the work of reclamation a slow one, and that at least a period of from two to five years will be required to place the soil in a condition for testing its capabilities of production.

4. The improvements already introduced by the new settlers in buildings, processes of labor, agricultural implements, &c., are very perceptible and obvious; and it is easy for the passing traveler in any portion of this county to distinguish, at a glance, as he rides by, the farms belonging to the "Yankees," from those of the original settlers. In fact, in many instances, he may travel for miles without discovering any other but these "Yankee" settlements, the "steadings" of the Virginians being generally remote from the road and for the most part out of view, while the Northerner uniformly locates within a few rods, at farthest, from the highway, that he may "have an eye to windward," and know "what is going on." There is likewise a very manifest difference between the architectural taste of the two "people" in the erection, arrangement and conveniences of the family mansion—the advantage being decidedly in favor of the North. Seldom, moreover, do you find a good, substantial barn, on a Virginian farm of ordinary pretensions. Never do you find a Yankee without one, even though its expense may seriously cripple and retard the construction of his dwelling. The vast, lumbering, unsightly and cumbrous market-wagon of the Virginian, with its retinue of five powerful horses, surmounted by "out-riders," and filled with supplies adequate to the relief of any ordinary garrison, to say nothing of beds and bedding for the accommodation of men, women and children, during the journey of two or three days and nights to the market town, is wholly unknown to the enterprising and ingenious Yankee; nor could he by any possibility be made to believe that his two-horse lumber-wagon could not easily transfer to Washington and Georgetown, in a single day, at least twice the quantity and value stowed in these immense and formidable machines. As to the matter of fact involved in these rival pretensions, I cannot undertake to determine; but I "opine" that ten years hence the present market-wagon of Fairfax County will be ranked among the *curiosities* of the past. Sure I am that a New-Yorker who had never witnessed a similar vehicle would stare with amazement upon its enormous volume and its intricate machinery; and that the advent of such a wagon, accompanied with all its "fixins," in Broadway, would create a sensation at least equal to that with which the good citizens of Newburgh on the Hudson surveyed the first steamboat which anchored opposite their goodly town.

5. The wages ordinarily paid for free labor in this vicinity are from seventy-five cents to one dollar per day; and so far as my own experience goes, and my information extends, no difficulty exists in obtaining this species of labor for all the various purposes for which it may be required.

6. The "proximity of slaves and slavery," except so far as this institution is to be regarded in a moral point of view, and in connection with the principles of a sound and enlightened political and social economy, is by no means "offensive" or "annoying" to our people, under the circumstances in which they find them-

selves placed. In fact, it seldom obtrudes itself upon their observation, unless they voluntarily go in search of it: and when they come in contact with it, in the ordinary interchange of the civilities and amenities of life, they possess too much good sense and entertain too just an appreciation of what is due to the courtesies and reciprocal obligations of social intercourse to volunteer their opinions, unsolicited, upon the abstract question of its justification. When called upon in a proper manner and on an appropriate occasion to express their sentiments on this head, they do so, without offence being given or received; nor have I perceived any unwillingness on the part of the owners and holders of slaves freely to discuss this topic in all its relations, to "define their position," and to combat, temperately, courteously and dispassionately, the views of those who entertain opinions and convictions on this subject different from their own. The treatment of the slaves, so far as it has come under my personal observation, presents none of those repulsive features so frequently insisted upon by northern abolitionists. Their hours of labor, clothing, food, attendance in sickness, moral and religious culture, are, in all respects, upon a par, at least, with the ordinary class of day laborers at the North; and the only difference—a difference, indeed, not to be estimated in silver or gold, "or all this earth can afford"—consists in the hopeless servitude of the one, and the entire physical freedom of the other.

7. Unslaked stone-lime commands at Georgetown and Washington, our nearest markets—a distance of from four to ten and fifteen miles from the farms of our northern settlers—twenty cents per bushel, or from fifty to sixty cents per barrel of three bushels.

8. I am not aware that any experiments have, as yet, been instituted in this neighborhood, with a view of testing the efficacy of plaster alone, as a fertilizer or a manure. Wherever it has been resorted to, however, in aid of and in combination with the ordinary farm-yard manures, the most beneficial results have ensued, and a more abundant and valuable crop has been secured than might under ordinary circumstances have been depended upon from simple manures alone, without the agency either of plaster or lime. Very few farmers, however, who are desirous of permanently improving their lands and developing their resources to the best advantage, neglect a liberal sprinkling of lime—unless an abundant supply of marl is conveniently accessible, and the resources of the barn-yard are ample. From fifty to one hundred bushels of the carbonate of lime to the acre, either as a top-dressing or plowed in and left to itself during the interval between fall and spring plowing is regarded by the most competent and experienced judges as the most suitable preparation for reclaiming exhausted soils; after which an abundant supply of plaster, accompanied with yard manure and an occasional turning-under of clover, buckwheat or peas—not forgetting a resort, now and then, to the subsoil-plow—will effectually prepare the ground for a luxuriant and abundant crop.

9. Very few purchases, so far as I have been able to ascertain, have been made in this quarter by northern or eastern men for purposes of mere pecuniary speculation. In several instances a greater quantity of land has been taken up than was needed for agricultural purposes by the purchaser; but this was almost invariably because in this way a much more advantageous bargain could be effected with the original proprietor; and the purchaser, being himself a bona fide settler, was well satisfied that within a brief period he should be able to dispose of any surplus beyond his own wants, to actual emigrants, at a reasonable advance. The low price at which valuable improved and unimproved lands are everywhere offered, forbid the supposition that the "land mania" of the West has as yet taken root among us.

I have thus, Sir, endeavored to answer, to the best of my ability, the various points presented by your letter; and shall be happy from time to time to furnish your readers with such specific information in reference to the climate, soil, capabilities and resources of this delightful and attractive region as may be in my power. If in any respect I may have erred, or shall hereafter err, in my estimates in any of these particulars, your own familiarity with this entire portion of the Union will enable you to set me in the right.

Very truly and respectfully your ob't serv't,

S. S. RANDALL.

[The gallant Commodore T. AP. CATESBY JONES, who, it will be remembered, was superseded in the command of our Pacific squadron, or rather our squadron *in the Pacific*, and

ordered home to be tried for being rather too quick on the trigger, in capturing the town of Monterey, owns, by inheritance, a fine estate—one which he has made so—in this very part of the Old Dominion, and is, moreover, regarded as one of the most resolute pioneers, in the course of improvements so visible there within the last few years. We have understood that his field—not patch—of corn averaged, last year, not less than fifty bushels to the acre. Years have passed away, alas! too swiftly, since we remember to have been once and again at “the Pines,” and to have enjoyed a *running* view of that then somewhat haggard looking region. It was not, however, be it confessed, under circumstances very favorable for a leisurely agricultural survey, as the reader may guess when we add that it was when we used to go out from Washington at the “first blush of day” with a set of choice spirits under command of our old friend “honest George,” as General Jackson used to call him, upon neighborly and patriotic excursions, to beat up the quarters of the good farmers of Fairfax with a good pack of hounds, *purely to save their young pigs and poultry!*

“Oh! how glorious ’tis
To right th’ oppressed and bring the felon vile
To just disgrace!”

Those were indeed glorious times, with the British Secretaries, the amiable and gentlemanly ADAMS, and the frank, hearty and indomitable CRAWFORD to lead us back to reunite at 6 around the mahogany of “Sir CHARLES VAUGHAN,” there to do our duty most loyally to—his noble round of beef and his honest sherry!

“Alas! ’tis not easy to say *what* will bring to the mind
The joys that are fled and the friends left behind!”

In another part of Fairfax, lower down, near Mount Vernon, a considerable purchase, 2,000 acres, has recently been made by a party of “Friends” from Pennsylvania, to be cut up into small farms and cultivated with free labor. This may be an entering-wedge to the resettlement of the country still lower down, which for twenty miles along the high-road has been in a manner abandoned—so that within a few years taxes have been paid or money received for *wolves’ heads!* and the door of General Washington’s pew two years ago had been put to the “base use” of being made to secure a free negro’s poultry-house. The world does not present such a field for industry, enterprise and capital as Virginia. What is she doing to secure for the rising generation that *sort* of education which gives capacity for developing her inexhaustible and neglected resources?

Ed. Farm. Lib.]

STRAWBERRIES.—There is an object in the cultivation of this, and indeed in that of every other fruit, universally acknowledged to be worthy of attention, but seldom attended to, and that is, to have it in succession during a considerable time. It is a remarkable fact that since cultivators began to search for improved varieties by sowing seeds, not one *earlier than the old Scarlet* has been obtained, while of *fine late varieties* we have abundance. I believe the earliest now in cultivation is the Grove-end; next to that comes Keen’s Seedling, and some other good sorts, and among them the delicious but neglected Carolina; and lastly, the Elton, which lasts a long time. The Alpine is both an early and late sort, and *carries on the succession till frost commences*. What is wanted is an early variety, and to this object cultivators should lend their attention. We have, as yet, no good pale or white variety, and one should be sought for. I have raised a considerable number, and one remarkably prolific, and lasting a long time; but they all wanted firmness and flavor. By perseverance, and many pursuing this object, a fine variety may at last be obtained. Although it has been stated in the *Chronicle* that strawberry plants would continue to yield good crops during many years with a little care, I am still of opinion that what I recommended many years ago is of use, *viz., to make new plantations every second year*. My reason for this recommendation was, that when the plants are left longer, new sorts rise among them from the seeds of berries that drop or are left, and thus the crops are, for the most part, deteriorated by mixture, and it may become difficult to recover the original variety. My practice was to plant in February, not to reckon a crop the same year, and to take two crops afterward; so that when I dug down the plants I had another set ready to produce. The public would be better served with this and other fruits, if they were not exposed to the sun in shop windows, and at the doors, but kept in a cool, shady place. The strawberries brought to the Edinburgh market, once famous, are now for the most part very inferior; and the effects of careless handling are so conspicuous as to be rather disgusting.

[Correspondence of an Edinburgh paper.

ALPACCA SHEEP.

THE WOOL TRADE OF ENGLAND IN 1846 IN PERUVIAN AND UNITED STATES WOOL.

IN answer to inquiries about this breed of Peruvian sheep, we scarcely know what to say. As in the case of the *revival* about *Guano*, it was no new story to us: More than twenty-five years ago, we not only published a beautiful history and description of these sheep, from the polished pen of WILLIAM DAVIS ROBINSON, but caused engravings to be made, from drawings supplied by him, characteristic not only of the *Alpacca*, but of the *Llama*, the *Vicuna*, and the *Huanaco*; with the costumes of the shepherds, both natives and descendants of European stock.

All these will be found in the 3d volume of the *American Farmer*, for which the sketches were expressly prepared by Mr. Robinson, then in New-York, his first letter being dated 28th of April, 1821.

There, too, will be found from Mr. Robinson, as elsewhere in the early volumes of that work from other sources, interesting accounts of the *Arracacha*—spoken of in the following letter—a vegetable, at that time, very highly recommended. General DEVEREUX, always prompt in doing kind and benevolent acts, sent home some of the roots, which were tried under the skillful care of Doctor G. B. SMITH of Baltimore, and by him “found wanting.”

If ever we should find the space at command, we will re-produce these essays on the Sheep of Peru, which Mr. Robinson was of opinion might be introduced with great advantage to the United States. For ourselves, we confess we have our doubts. In the East, the climate would seem to forbid; and in the South—say the mountains of Western Virginia, Carolina and Georgia, which God and Nature intended for sheep-walks, and woolen, and cotton, and iron manufactures—they would be in every way too much exposed. We are positive that in one of his lectures, or on some public occasion, Professor Johnson observed that a friend of his in Scotland had informed him that he had sufficiently experimented to convince him that the attempt to rear them, as a stock sheep in Scotland, *could not succeed*. How many attempts have been made in England, and with how little success? and they are not a people to fail, for want of either capital or care, skill or perseverance, in such things. See how they took hold of the *Guano*, when they got a few bags of it a few years since! Yet, twenty years or more ago, the writer of these lines told the whole story about *Guano*, too, from Ulloa and from Humboldt, and even gave the analysis of French chemists of the first renown, whose description has stood the test to this day—and, moreover, distributed two barrels of it. So that *we* had the history of its uses in Peru, an account of its constituents, and ample specimens for trial of the article itself. What more was needed? Look at the old volumes of the *American Farmer*. But no!—we are so eternally involved in party politics—every farmer ambitious to be a great little man—a magistrate, a judge of the Levy court, or a delegate—an ensign, a lieutenant, or a “noble captain” in his district or his county—or otherwise is so much taken up with ideas of “*moving to the West*” that he loses all, or, rather, never acquires any true relish for *his own native*

home and proper business. Nor is it much to be wondered at. For are not our young men brought up as if purposely in contempt of the plow, and all that belongs to it? Do they hear anything of it at school? Is it made by their wise farmer-parents to form any part of their education? Do they hear anything said of Agriculture in any of our halls of Legislation? Any honors awarded for excellence in killing noxious weeds and insects, or for fat sheep and bullocks, or for killing any other creatures, except—our *fellow-creatures*? No, no! Were a man to discover the means of utterly extirpating the tobacco fly, or the Hessian fly, or the sheep rot, or the potato rot, not a man could be found so poor as to “do him reverence”! Congress—the Representatives of Farmers—would let him rot in jail. Yes! the very men who would vote, without scruple, \$100,000 for a military survey; or to send officers, year after year, to examine and study in the military schools of the military despots of Europe! And to all this farmers make no objection, raise no outcry. Even agricultural committees of the States, where they exist, are most of them too lazy or too timid to probe such barefaced perversions of legislative power! and the whole press of the country looks in silent acquiescence on such reprehensible disregard of all the legitimate ends of good Government.

Well, to return to the Alpaccas. Seeing as we think we have seen the abortive attempts at propagating the Alpaca in Europe, and their prompt appreciation and *appropriation* of whole islands of guano, we reluctantly conclude that the abortion in the former case did not proceed from any deficiency in the attempt, and that, as in this country, it is only in a climate the most similar to England that we could expect the experiment to be well and adequately conducted, there is little encouragement to believe that the Alpaca will be successfully introduced and propagated in the United States. And here it occurs to us to say, that as some of the inquiries that have been made of us may have been prompted by the fact that our name was placed on a Committee to import some from Peru, it is not to be inferred that anything we have said is the result of inquiries or information obtained *in that connection*! Not at all. In the fitness of the members of that Committee, in all respects, for any scientific or useful undertaking they would enter upon, we have unbounded confidence; but we do not know exactly what has been done or what is in contemplation. We have not formally withdrawn, as we might have done, for want of time to attend, because we would not in any way seem to discourage the proposition by the withdrawal even of the little, very little, influence it could borrow from our name; but for the reasons here assigned, and others that might be given, as we should, if we had time, with more deliberation, we are far from being hopeful of any attempt to add the Alpaca to the wool-bearing animals of this country. We shall sincerely rejoice to find ourselves in error.

In the last account we have seen of the English “WOOL TRADE OF 1846,” we find the following under the head of “PERUVIAN AND ALPACCA:” “Here we notice a very large increase. Sheep’s wool, with the exception of best qualities, has been difficult of sale, even at receding rates. Since our last monthly Circular, the market has been nearly cleared of this description, principally taken on speculation. For *Alpaca*, up to May, the demand was very languid. During that month there was a large business done, induced by low quotations. The inquiry again fell off until within the last few weeks, since which time the sales have been extensive at advancing prices. The Customs’ Report does not keep Alpaca distinct from sheep’s wool; we can therefore merely guess at the quan-

tity which we believe to have been a full average import. The high prices current on the other side have led to shipments of very inferior quality, which we expect to continue till the completion of the contracts entered into at high rates. It is reported that supplies will be very much diminished this year, in consequence of the *extensive drouth, which has caused great mortality in the Alpacca and Llama flocks.*" Of WOOL FROM THE UNITED STATES, the same Circular, of Hughes & Ronald, of Liverpool, says :

UNITED STATES.—This article promises at no distant date to become of first-rate importance. The present growth is much greater than we in this country have generally an idea of, being upward of sixty millions of pounds weight at the lowest estimate, far exceeding their domestic requirements. It is important to notice the great weight of the fleece, which is nearly double that of any other country producing similar qualities; and when we consider the facilities for extending the production, there cannot be a doubt that, in a short time, the quantity available for export will be very considerable. Moreover it appears, that of late much attention has been directed to the subject in the Western States, with this view, as offering, to some extent, a more profitable return than the cultivation of cotton; and when it is

stated that one pound of wool, nearly full blood, can be grown at the same cost as two pounds of cotton worth 6d., there is every reason to expect that the trade will eventually prove remunerating. The receipts last year were below the previous one, the consequence of former shipments generally not having been attended with advantage; but this is accounted for, to some extent, by the indirect channels through which many of the lots came, and their inferior condition in most cases. Until they are got up with more care, better washed, and more evenly graded, we see little prospect of a profitable result. The greater part hitherto received has been so deficient in these essential requisites that purchases have been attended with extreme hazard to the buyer, which has operated much against their sale.

We have had, as will be seen, for many months on file, the following from a gentleman who has resided in Peru, and with habits and every capacity for useful observation. His description of the Peruvian sheep, as far as it goes, corresponds in the main with Mr. Robinson's.

J. S. SKINNER, Esq.

NEW-YORK, 18th May, 1846.

Dear Sir: In answering your esteemed favor of the 7th instant, I beg to say that what I now write will be from casual observation, not having given the subject any attention during my long stay in Peru, with a view of communicating information to others.

The "Alpacca" is indigenous to Peru, generally $4\frac{1}{2}$ to 5 feet high, neck 2 feet long; they carry themselves, particularly the neck, very erect, so that their head is from $5\frac{1}{2}$ to 6 feet from the ground; they move majestically, limbs very clean. They are used among the flocks of Llamas as beasts of burden, and are much esteemed, being sure-footed: and in droves never run one load against another, as mules and horses are apt to do, thereby frequently destroying their cargoes if of a frail nature. Alpacas carry from 75 to 100 pounds, and, when overloaded, lie down and will not rise until lightened; are very docile and fond of being caressed, and make fine pets. Color generally light brown or dark nankeen, though I have seen many black, and some beautifully white. The Alpacca is not considered so noble as the Llama, and, I suppose, it is owing to the wool of the Alpacca being much longer (say 8 to 12 inches), which injures their appearance. They eat anything and little, and will live when many other animals would die; are tough and hardy. Formerly you could buy them for \$1; but they are now worth from \$4 to \$6 in the interior, and would cost about \$25 on board ship.

As food, they are not much esteemed.

The value of their wool has been much increased, in consequence of the large demand for England, and most or all the wool has been contracted for, for some years to come. When last in Peru (1845), I wished to purchase some Alpacca wool, but could get none at Tacna, from which the most is exported. A friend then gave me an order for 10,000 lbs., to be received at Islay; but as we only stopped there one night, I could not take it, as it would have detained me 3 or 4 days for the necessary orders at the Custom-House.

I have ordered twelve Alpacas, and if they are procured in time, shall receive them in October [last], per ship "Orpheus," which I expect here

about that time. Sometimes they die on the passage. Of 297 shipped on owners' account to England—1 male to 9 females, 2 years old—only 3 arrived. The vessel was loaded with guano in the lower hold. Frequently 12 or 15 have been shipped, and only one or two die; the risk of bringing is great, on account of distance; at least 12 or 14,000 miles must be sailed over.

"*Quinua*" is a small grain much used in Peru, produced in the highlands of the interior; is sowed like wheat, and gives a large crop. It is cooked by boiling with potatoes and meat, or alone, like rice; but the natives generally cook it with a small piece of meat, cheese, or other substance, to give a flavor. It also makes a delicious sweetmeat and pudding, and is much used as a diet. The Emperor of Russia ordered it sowed largely in his dominions; with what result I know not.

At the request of a friend, when I visited Peru in 1844, I sent to the valley of Jauja for a bag of *Quinua*, which I brought with me to the United States, and sent a part of it to the Commissioner of Patents, and a part to the person who requested me to obtain it; and he has since informed me that he had sown some, but that it did not grow. I supposed that it must have been kiln-dried, or injured on the voyage. I have no doubt that it would be much liked if it could be produced here, and I see no reason why it cannot.

Arracacha is unknown to me by that name.

So far as my observation goes, *Merino*, or part-blooded sheep (as they keep in the best order) are superior for *sea-stock* to other classes of sheep.

The "*Vicuua*" I have frequently seen when crossing the Andes, or on the Punas (highlands), which I have crossed fourteen times; and it is a fact, as I have been told, that if you can encircle them with a red yarn two feet above the ground, that none will leave the circle; and by shooting one of a flock, you can take all but two or three, as they all congregate about the dead one until only a few remain, when they run off.

Respectfully, your most ob'dt,

SAM. F. TRACY.

SHEEP AND WOOL—NUMBER AND VALUE IN THE UNITED STATES IN 1840.

THE quantity of Wool sheared in the United States in the year 1839, according to the census of 1840, and the estimated value by Professor Tucker at that time, as the result of his inquiries on the subject, are as follows:

| States. | Pounds. | Value. | States. | Pounds. | Value. |
|-------------------------------|-----------|-------------|---------------------------|------------|--------------|
| Maine..... | 1,465,551 | \$492,942 | Alabama..... | 220,353 | 66,206 |
| New Hampshire..... | 1,260,517 | 441,181 | Florida..... | 7,285 | 2,185 |
| Massachusetts..... | 941,906 | 329,677 | Louisiana..... | 49,283 | 16,428 |
| Rhode Island..... | 183,830 | 65,340 | Mississippi..... | 175,192 | 52,559 |
| Connecticut..... | 889,870 | 311,434 | Arkansas..... | 64,943 | 20,483 |
| Vermont..... | 3,699,235 | 1,284,232 | Tennessee..... | 1,060,332 | 265,583 |
| Total New-England States..... | 8,440,969 | \$2,924,806 | Missouri..... | 562,265 | 140,564 |
| New-York..... | 9,845,995 | 3,445,853 | Kentucky..... | 1,786,847 | 446,712 |
| New-Jersey..... | 397,207 | 139,622 | Ohio..... | 3,685,315 | 921,329 |
| Pennsylvania..... | 3,048,564 | 1,066,997 | Indiana..... | 1,237,919 | 309,473 |
| Delaware..... | 64,404 | 22,541 | Illinois..... | 650,007 | 162,500 |
| Maryland..... | 488,201 | 170,870 | Michigan..... | 153,375 | 38,344 |
| Virginia..... | 2,538,374 | 761,512 | Wisconsin..... | 6,777 | 2,259 |
| North Carolina..... | 625,044 | 156,261 | Iowa..... | 23,039 | 7,679 |
| South Carolina..... | 299,070 | 89,721 | District of Columbia..... | 707 | 212 |
| Georgia..... | 371,303 | 111,391 | Total..... | 35,802,114 | \$11,341,390 |

The average value, by this statement, is about 33 cents per pound.

Since the census of 1840 was taken, an immense increase in the number of sheep, in the Western States particularly, has taken place.

The total number of sheep in the United States, when the census was taken in 1840, was 19,311,374. Of course the average weight of their fleeces cannot be ascertained, as the number of lambs is not given in the census; but, making a liberal allowance for the lambs, it would appear that the average weight of fleeces did not exceed three pounds each.

INFALLIBLE EGG-COUNTING MACHINE.

THE counting of eggs, in large quantities, by the ordinary method is an operation always attended by much loss of time, liability to mistake, and risk of breakage. The machine described below may be made in a day or two, by any one possessed of mechanical skill sufficient to handle a saw and hammer, unless neatness of finish is desired. Let a frame of wood-work be made precisely similar to a chest of drawers. The drawers should be one inch deep (or sufficiently deep to admit of one layer of eggs), and the bottoms formed of thick plank.

Previous to putting together, hollow places should be dug in this plank, in rows, at regular distances. They should be one-quarter of an inch deep, and of the size and shape requisite to allow an egg to be laid in each one. A square yard will contain more than five hundred of these hollow places. They should be painted black, and the remainder of the board white. When filled with eggs, the board will present an entirely white surface; should one or more eggs be lacking, the black spots will immediately be apparent to the most casual observer. Black lines should divide the hundreds, and tens: and, when full, the drawer may be shoved back into its place, until the contents are wanted for market. Any number of drawers may be made, of any convenient size and shape.

It will be conceded that it is as easy to deposit the eggs in these drawers as in any other proper place; and, when once in, they are ready counted to hand, without the possibility of a mistake. Besides this, the perfect safe-keeping of the eggs is secured, as no rats or other depredators can obtain access to them, and they will not be broken by shaking or handling. A machine to count 2,000 eggs at a time will cost \$1 for stuff, and \$2 for making, and will last till the general conflagration.

S. H. M.

COMMERCE IN EGGS.

IN the whole cycle of commercial statistics, we have not lately met with anything more remarkable than the account we find in the "*JOURNAL D'AGRICULTURE PRATIQUE ET DE JARDINAGE*," on the *Egg Trade* of France. The Editor says that it appears by official returns that in 1815 the number of eggs exported was not more than to the amount of 1,000,700 francs. In 1816, 8,800,000 francs; in 1822, 55,000,000; in 1824, to 99,500,000! The trade was then arrested, and experienced a retrograde movement. The exportation fell to 55,000,000 in 1830, but in 1834 it rose again to 76,800,000, and in 1844 it mounted up to 88,200,000. This mass of eggs weighed, at the rate of sixteen to a kilogramme, 5,213,000 kilogrammes; upon which the Treasury realized 114,000 francs (about \$25,000) export duty on eggs! England takes almost the whole of the eggs exported from France. Of the 88,000,000 above mentioned, 82,500,000 have crossed the Channel.

According to the official estimates, the consumption of eggs in Paris is 138 for each individual, which is very nearly 120,000,000 a year. We may double this estimate for the rest of France, without exaggeration; for, in the country, eggs and milk are aliments to be found on every table. We eat, instead of eggs and milk, vast quantities of *solid fat meat*—Americans having, as was expressively said by the Abbé CORNEA, "*bacon-stomachs*"!

The consumption, then, of eggs, in all France, may be safely put down at nine billion, three hundred million. If we add to this total that of the eggs exported, and one-hundredth in addition of these two numbers for the eggs reserved for reproduction, one will find France has produced *nine billion and a half*; and, valuing each egg at the rate of the tenth of a cent, we have the enormous sum of 465,000,000 of francs, or near \$100,000,000. Though this estimate may overrun the production in some of the Departments, it is nevertheless certain that the value which represents the annual production of eggs is to be counted by *millions of francs*, and to most people must be a matter of surprise.

Speculating as to the cause of this wonderful productiveness of poultry in *France*, over any other country, one is led to attribute it to the same reason which has so much diminished her produce in animals and animal food—namely, the division of estates, *carried to an extreme* highly prejudicial to general Agriculture. The land laws of that country compel an equal division of estates among the children or relatives in a certain degree, without power in a proprietor to sell more than one share. Under the operation of these laws, it appears that in 1830 the 120,000,000 of productive acres in France had been divided into 123,000,000 lots or *parcelles*. It is farther shown by official returns that there are 5,163,000 proprietors, whose average holdings are under five acres. These establishments are altogether too small to allow of the proprietors' keeping horses, and cattle, and hogs, and sheep; and hence the *great number of poultry and of eggs!*

FATTENING POULTRY.

THE same French periodical—JOURNAL OF PRACTICAL AGRICULTURE AND GARDENING—gives the following account, on the experience of those engaged in the poultry business, as the means pursued where fowls are found most remarkable for the delicacy of their flesh. The whole secret, say these people, consists in giving *oats* at discretion to chickens, turkies and geese, and keeping them in darkness. The rationale of the process is said to consist in this: No substance will fatten fowls like oats—perhaps they have had no trial of Indian corn, which frequently interposes to influence our estimate of European calculations as to the aliments best adapted to feeding and fattening. Be that as it may, we proceed with the rest of the statement, which is as applicable to corn as to oats. It is affirmed that potatoes produce scarcely any fat. If, say they, we keep an animal in the dark and in a narrow space—that is, the less exercise is allowed to a fowl—the more it will take on fat. We observe the same thing with the negro's hog: Confined in a small pen, where he has scarcely room to turn round, how fast he outgrows his master's of the same litter. True, he may be often fed in the *dark*, as well as in the day time. Thus shut up in a dark place, says the Frenchman, the fowl concludes it one eternal night, and so keeps always sleeping; whatever most paralyzes its movements promotes fatness; it wakes only to eat, which it does in the night as well as day. If it sees the light it becomes agitated; but, the light excluded, it remains quiet and without motion.

Doubtless this practice of taking measures to insure darkness, and immobility, and perfect exemption from all agitation, might be well applied in the fattening of all animals, with great economy both of time and provisions.

MORE OF THAT FARMER WHO MILKS HIS OWN COWS.

IN the January number of the *Journal of Agriculture*, we gave a running sketch of a "Breakfast-table Conversation" with a practical farmer, near Lebanon Springs, N. Y., who, when we made him a visit last summer, prompted by the common report of his good management, was just about to take his station on the right flank of a "full-uddered" cow, that stood patiently chewing the cud, waiting her turn to be relieved of her milky treasures. The short notes of his management made at the time having become almost illegible, we wrote for some explanation on particular points, and now, for certain considerations, we have concluded that the publication of his letter, just as it was written, may not be without its usefulness, and will best conduce to the end we have in view, which is, to make the South and the North, the East and the West, better acquainted with each other's habits, character and products respectively. We give the answer of Mr. Hall then, precisely as it was written, without alteration of word or letter. It will show that it by no means follows that those who every day follow the plow, cannot also use the pen well enough for the best use that can be made of it—that is, to make one's self *clearly and plainly understood*. We even venture to ask whether it would not be safer to take such men as he, who are bound by an abiding sympathy to the landed interest, from draining and plowing their fields, to frame our laws and take charge of our public affairs, than to be governed by all the pettifoggers, and mere party demagogues, this side of Passamaquoddy!

MR. SKINNER:

NEW-LEBANON, Dec. 15, 1847.

Dear Sir: Yours of the 13th was duly received, as was also the December number of *THE FARMERS' LIBRARY*, for which please accept my thanks.

Please allow me, Sir, to ask you to correct one mistake into which one of us has inadvertently fallen: that is, by the addition of one too many cyphers (0) to the number of pigs I sold.

I hasten to answer your inquiries in a desultory manner, hoping they will be intelligible and interesting, but would remark that I am altogether more accustomed to plowing and feeding pigs than I am to writing.

My apparatus for cooking feed is simply a steamer made of plank 7 feet long by $2\frac{1}{2}$ wide and 2 feet 4 inches deep, with a Russia sheet-iron bottom, (copper would be better,) nailed on to the plank, with a *false* bottom of boards (filled with small holes) 4 inches above the iron one. A cover completes the steamer. The whole is placed upon a brick area so constructed that the plank or sides and ends reach on to the brick work $4\frac{1}{2}$ or 5 inches, which protects it from the fire. The space between the two bottoms is filled with water, and that above with the vegetables. The vats to contain the food when prepared for feeding run on rails the length of the piggery, and pass near the steamer, for the convenience of removing the food after it is cooked.

The method of making butter we practice is as follows: Room used, kept as near a temperature of 60° as may be; milk strained into a large can, placed in the milking-yard, which adjoins the milk-room, inside of which it is drawn by means of a conductor and faucet into tin pans, usually about 8 quarts in each pan; it is drawn over and placed in the can whenever the temperature requires it; consequently the cream rises in much less time than when cooled in the ordinary way; it ought to stand 36 hours before being skimmed, but this time must be varied according as the weather changes; it should be skimmed when it is slightly changed, and before it is coagulated. The cream is put into stone jars and placed in a refrigerator in contact with ice until it is churned, which is done every two or three days, in a circular churn with revolving arms or paddles framed into a shaft of *wood* (cream should never come in contact with iron). The motive power is a platform wheel turned by a pony. The butter is salted with ground rock-salt passed through a fine sieve, that there may be no lumps

or particles that will not dissolve. It is salted to suit the taste, which should be adapted to the market for which it is intended; it is then placed in the refrigerator and kept cool until it is taken out, worked on an inclined table, packed in new tubs containing 25 lbs. each, and sent to market, which is done every week, always using ice in every situation required.

You will be best able to judge of the value of the offal, milk and *buttermilk* for hog feed, when I state that I have sold pigs, pork and lard to the amount of \$1,063 09, at an expense of \$767 for purchase money of pigs and feed other than milk; and that my hogs have made, of the feed and materials given them, near *three hundred half-cord loads of manure, the value of which every farmer ought to know*. I make about 200 loads from my teams and cows, which I suppose to be about one-third less in value than the manure made from hogs.

I hire two men through the year, say \$130 each, and one for eight months, \$90; consume about 2,000 lbs. of meat per year in a family of 10 persons.

The calves I send to market (except those for my own cows) are bought in the neighborhood, at 4 or 5 weeks of age, and usually sell at $4\frac{1}{2}$ to 5 cents per lb. for carcass, and 9 cents for skin. Expenses on each one about \$1.

The eight pigs you allude to were killed very early in the season (first week in November). They weighed 270 lbs. average. Killed 59 hogs, average weight 290 lbs.; average price $5\ 48\frac{1}{2}$ -100 cents per lb.

I have tried an experiment in the construction of blind ditches, or under-drains, since I saw you, which resulted satisfactorily. In a field of 9 acres, very level, and lying at the base of a hill, I have been very much troubled (whenever I have plowed it) with surface water, which has some seasons destroyed the crop. I suppose the difficulty lay in a very tenacious subsoil, which retained the water (that ran from the hill) near the surface. I staked out a line for a ditch 30 rods long, took one pair of horses, a common plow, (a subsoil-plow would be much better after the first furrows,) and four men, and commenced; turned up the sward the first two furrows, and removed it a little one side; then went down with the plow, so guiding it as to produce the required slant or slope to the sides of the ditch, and at every furrow throwing out the dirt. The moment that we had penetrated far enough into the subsoil to drain the adjoining surface, the quantity of water that rushed out was perfectly astonishing, and satisfied me that my plan was a correct one. Give me 4 good horses, with proper tools and men, and I can dig any quantity of drains $2\frac{1}{2}$ feet deep for $12\frac{1}{2}$ cents per rod.

I think you will be weary after perusing a rambling epistle of such length.

Respectfully your friend,

B. F. HALL.

GREAT DESTRUCTION OF NOXIOUS ANIMALS.—BIRDS AND BEASTS.—Could any one suppose that in an old country, as France, in the last six years, in the forests of the Crown alone, there have been destroyed by guns and traps, noxious animals—birds and beasts—as thus: wolves 53; she-wolves 22; young wolves 13; foxes 5,421; badgers 213; pole-cats 3,659; American pole-cats 3,050; dogs 1,597; cats 7,734; weasels and hedge-hogs 34,452; buzzards 4,473; hawks 7,451; cats-huants 10,170; crows 18,466; magpies 21,450; jack-daws 19,479; squirrels 6,030; rats and mice 10,322—total 154,517. So it is stated in the Journal of Agriculture.

TO DISINFECT DAIRY VESSELS OF ALL NOXIOUS ODORS—A valuable Recipe in a few words.—Every dairy should have a vessel of *lime-water* setting in it, say *half-gallon* of lime to ten or twelve gallons of water, simply to rinse everything in. The vessel can be filled up as often as you please. It will be sure to remove all acidity or bad odor. Let dairywomen remember this.

EXCREMENTS.—In Flanders the collected excrements of a man for one year are valued at £1 17s. A pound of urine contains all the ingredients necessary for the production of a pound of wheat.

MAIZE, OR INDIAN CORN.

THE demand for this valuable American grain, which has sprung up in Europe, principally in consequence of the failure of the potato crop in Ireland and other European countries, promises to be of more than temporary interest to the farmers of the United States.

Although the present high prices for this grain in our Atlantic ports cannot be expected to be maintained in future years, yet we believe that the extended use of it in various parts of Europe will cause it always hereafter to be regarded with favor as a cheap food in quarters where it has been hitherto either unknown or considered with prejudice, as fit only for the food of cattle and swine. Taking all circumstances into view which are likely hereafter to influence prices, we are induced to think that, in years of plenty, an extensive demand for export will exist in our Atlantic ports—not at the present prices of 90 cts. to \$1 per bushel, but probably at remunerating prices to the farmer and those who transport the grain from the interior to the sea-board—say from 50 to 70 cts. per bushel.

We recollect a conversation which we once had with a southern planter on the Alabama River, in which he remarked that he would prefer raising Indian corn at 25 cts. per bushel (shelled), delivered on his plantation, to cotton (ginned and cleaned) at 9 cts. per pound.

According to the estimates of Professor Tucker, of Virginia (now of Philadelphia), of the value of maize raised in each State of the Union, by the census of 1840, and the result of his own inquiries—which we published in a Table in THE FARMERS' LIBRARY, vol. i., page 591—it appears that the average value per bushel for the United States at that time (when there was no extraordinary foreign demand) was about 35 cts. We have no doubt the average value of the crop of last year would be found to be at least 60 cts. for the whole United States. This price, supposing the crop to have been 400 millions of bushels, would produce an amount of *two hundred and forty millions of dollars*. It must be recollected, however, that the farmers require a large proportion of the corn raised by them for their own use; but, if we suppose that they dispose of one-quarter of the crop to non-producers in the United States, and for export to foreign countries, it would then appear that one hundred millions of bushels of last year's crop have been or will be disposed of by our farmers at an average price of 60 cts. per bushel, amounting to sixty millions of dollars, or twenty-five millions of dollars more than the same quantity would have brought in market in the year 1840.—This shows the immense advantages our farmers who have raised corn to sell have derived from the scarcity in Europe, although probably not more than fourteen or fifteen millions of bushels of last year's crop of maize have been or will be shipped to foreign countries.

The proportion of the crop of maize raised in 1839, in different sections of the United States, and the value thereof, according to Prof. Tucker's estimates, and the Table published by us last year, are as follows:

| States. | Bushels. | Value. |
|---------------------------|------------------------------------|---------------|
| New-England States..... | 6,992,909 | \$4,794,893 |
| Middle States..... | 39,946,213 | 23,356,515 |
| Southern States..... | 91,998,255 | 44,994,506 |
| South-Western States..... | 129,741,093 | 38,259,033 |
| North-Western States..... | 105,833,405 | 21,186,681 |
| Total United States..... | 377,531,875 | \$132,591,628 |
| (937) | Average about 35 cents per bushel. | |

It is a singular fact that the value of Indian corn raised in the cotton-growing States, according to the above estimates, is greater than the value of cotton grown in the same States, as will be seen by the following:

| States. | Bushels. | Indian Corn. | Value. | Cotton, Value. |
|---------------------|-------------|--------------|-------------------|----------------|
| North Carolina..... | 23,893,763 | | \$9,477,505..... | \$3,633,863 |
| South Carolina..... | 14,722,805 | | 7,361,402..... | 4,628,270 |
| Georgia..... | 20,905,122 | | 10,462,561..... | 11,437,467 |
| Florida..... | 898,974 | | 404,243..... | 726,632 |
| Alabama..... | 20,947,004 | | 8,378,801..... | 8,209,717 |
| Louisiana..... | 5,952,912 | | 2,976,451..... | 10,678,873 |
| Mississippi..... | 13,261,237 | | 5,264,394..... | 15,472,126 |
| Tennessee..... | 44,986,188 | | 11,246,547..... | 1,662,076 |
| Arkansas..... | 4,846,632 | | 2,423,316..... | 361,718 |
| Total..... | 150,314,637 | | \$57,995,320..... | \$56,810,744 |

The total quantity of cotton raised in the above States in 1839 was 785,965,080 pounds; in Virginia and other States, 4,514,195 pounds. Total crop of the U. S. 790,479,275 pounds; valued at \$57,130,302—the average being a small fraction over seven cents per pound.

It remains to notice the exports of Indian corn and meal from the U. States to foreign countries. We will notice those of the last six years, viz.

| Years. | Indian Corn, Bushels. | Indian Meal, Barrels. |
|--------------------|-----------------------|-----------------------|
| 1841..... | 535,727..... | 232,284 |
| 1842..... | 600,308..... | 209,199 |
| 1843 (9 mos.)..... | 672,608..... | 174,354 |
| 1844..... | 825,282..... | 247,882 |
| 1845..... | 840,184..... | 209,030 |
| Total..... | 3,474,109..... | 1,132,749 |
| Average..... | 694,882..... | 226,549 |

For the year ending June 30, 1846, we have not the quantities exported, but the values are given as follows:

| | |
|------------------|-------------|
| Indian corn..... | \$1,186,663 |
| Indian meal..... | 945,081 |
| Total..... | \$2,131,744 |

At the average prices of last year, say between 50 and 60 cents per bushel, it appears that about four millions of bushels of corn and meal were exported, principally of the crop of 1845. This shows a great increase over the quantities exported in former years; and the export for the current year will probably be triple or quadruple that of the increased quantity of the year previous.

If the exports to foreign countries should amount to fourteen millions of bushels of Indian corn and meal, at an average price of 80 cents per bushel, the gain to the United States over the export of the same grain last year will be about nine millions of dollars.

Destiny of Indian Corn and Meal exported for the year ending June 30, 1845.

| Indian Corn, Indian Meal, | | | Indian Corn, Indian Meal. | |
|---------------------------|----------|----------|-----------------------------|---------------------|
| | Bushels. | Barrels. | Bushels. | Barrels. |
| British West Indies..... | 339,871 | 152,172 | Brazil..... | 870 107 |
| Swedish do..... | 3,630 | 2,996 | Cisplatine Republic..... | 490 |
| Danish do..... | 15,443 | 46,020 | British Amer. Colonies..... | 155,217 45,082 |
| Dutch do..... | 5,810 | 4,969 | England..... | 134,898 1 |
| French do..... | 17,654 | 925 | Ireland..... | 790 |
| Cuba..... | 67,596 | 6,248 | Gibraltar..... | 1,788 |
| Other Spanish W. Indies.. | 610 | 4,995 | Cape de Verde Islands.... | 320 30 |
| Hayti..... | 1,435 | 402 | Madeira..... | 30,499 |
| West Indies generally.... | 15,961 | 335 | Africa..... | 30 41 |
| British Guiana..... | 17,418 | 4,026 | China..... | 50 |
| French Guiana..... | 100 | | Sou. Seas & Pacific Ocean.. | 41 |
| Texas..... | 5,217 | 6 | Total..... | 840,184 269,030 |
| Mexico..... | 1,260 | 40 | Value..... | \$411,741 \$641,552 |
| Venezuela..... | 23,247 | 541 | | |

It will be seen that the exports of corn and meal for the above year were principally to the British American Colonies and the West Indies.

Consumption of Vegetable Food in the United States.

Professor Tucker, in his work entitled "Progress of the United States," says that about fifteen-sixteenths of the grain and potatoes produced in the U. S. are consumed at home, either directly or in the form of animal food, and only one-sixteenth is sent abroad in either of these forms.

The quantity of vegetable food annually consumed in the United States by a family of five persons, after deducting one-sixteenth of the grain for the amount exported, and one-tenth for seed, is as follows:

| | | | |
|------------------|-------------|---------------------|-------------|
| Indian corn..... | 85 bushels. | Wheat, rye, &c..... | 25 bushels. |
| Oats..... | 28 .. | Potatoes..... | 25 .. |

To the articles annually consumed by a family are to be added poultry to the value of \$2 25; pickled fish, one-third of a barrel; rice, 12 lbs.; sugar, 42 lbs.; besides garden vegetables, products of the orchard, and game.

IMPORTANT TO FARMERS.—A letter from a highly respectable house in New-York to a commercial house in this city, says: "The preference is now altogether for yellow corn, though but a few months back white was preferred. Meal from white corn is now also difficult of sale."

Yellow corn, we understand, can be readily sold for 4 or 5 cents per bushel more than white in the New-York market. The farmers will perceive the importance, in planting their next crop, of having reference to a fact likely so seriously to affect their interests; for, even if the next European harvests should be abundant, it is not to be doubted that the demand for corn will continue to be large for twelve or eighteen months to come. Having become familiarized, indeed, to its use, we may anticipate that it will continue, even after the necessity in which its exportation originates shall have ceased to exist, to constitute no inconsiderable portion of the food of the people of Great Britain. [Richmond Whig.

ENCOURAGING SIGNS FOR THE CAUSE OF AGRICULTURE.—There are no letters we peruse with more pleasure than such as the following. They show that the public sentiment is taking the right direction, and that we are steadily, even though it be slowly, approaching a great reform in our systems of education—one under which the youth of the country will cease to be instructed in anything and everything but in those very branches of knowledge by which they may gain, with more ease and certainty, that condition of competence and comfort which probity and diligence ought to insure to every citizen of the Republic. What we want—the great want for almost every State—as we have repeatedly urged, is a **NORMAL SCHOOL**, at its Seat of Government or elsewhere, in which *teachers* should be taught and prepared for the great, the noble office of *instructors of youth*.

We are truly gratified to see how wisely and feelingly this subject has been dwelt upon by Gov. BRIGGS, in his Address to the Massachusetts Legislature; and will copy that part of it in our next.

We shall never forget the delightful sensations experienced in witnessing the exercises of such a school at Albany, to which we were taken by an enlightened citizen who has since done to Fairfax, Virginia, the favor to take up his abode there.

We will not so far reflect on the judgment of any reader as to suppose that he does not at once see the connection between enlightenment of the mind of the masses, and security of property, and the general prosperity and safety of the country.

JOHN S. SKINNER, Esq.

BALTIMORE, January 12, 1847.

Dear Sir: I am desirous to find a situation in every respect suitable for a son of mine, 20 years old, to learn farming, horticulture, &c. Presuming you are able to inform me, I take the liberty of requesting you, if you know a situation of the above kind, that you will inform me. I would merely add that my son is a very moral young man, and is desirous of learning the business of a farmer. An answer, at your earliest convenience, will oblige

Your obedient servant.

TO DESTROY WEEVILS.—Apply with a brush to the walls and floor of the granary, strong lime-water, and in a few days afterward wash the floor with soap and warm water.

LETTER V.

PROFITS OF SHEEP HUSBANDRY IN THE SOUTHERN STATES.—I. DIRECT
PROFIT ON CAPITAL INVESTED.

Different points of view in which the question of the profitableness of Sheep Husbandry in the Southern States is to be regarded... Direct profit on Capital invested first considered... Average prices of Wool in New-York... Average weight of fleece—Price of Sheep—Increase in Lambs—Amount of Manure... Price of Land... Number of Sheep supported per acre... Estimate of the Expenses and Profits of 100 Sheep, taking average prices of Wool for the last fourteen years... Present low prices of Sheep—Causes—Estimate of Profits of 100 Sheep, at present prices of Sheep and Wool... Profits far below what they might be by breeding better Sheep... Writer's Flock—Annual yield of Wool—Prices sold at for six years—Statistics of Premium Flock... Show that Wool can be produced at a large profit in New-York at present prices... Healthfulness and economy of substituting Mutton for a portion of the Bacon consumed in the Southern States... Economical advantages which Sheep possess over other animals—No risk by Death—Manure more valuable—Best clearers of Briery Lands—Improvers of Vegetation... The cost of producing Wool in the South, compared with the cost in New-York... Number of Sheep which can be supported per acre South—Greater number than on land of the same quality North, by reason of the winter growth of grains and grasses in the former... Col. Allston's statement—R. L. Allen's—Col. Hampton's—Hon. R. F. Simpson's in relation to the Atlantic States south of Virginia... Price of Lands in those States... Winter Vegetation in Tennessee, Kentucky and Virginia... Mr. Coles's statement—John S. Skinner's... Recapitulation... Estimate of Profits on 100 Sheep South—Compared with New-York... Profits on the Southern Mountains... Doct. Brockenhoro's statements—Mr. Murdock's... Economy of Migratory Sheep Husbandry... Advantages for it in the South compared with those of Spain... Drawbacks on Profits of Sheep Husbandry—Dogs and Wolves... Their depredations compared with those in Australia and the Cape of Good Hope... Remedy.

Dear Sir: In ascertaining the Profits of Sheep Husbandry in the Southern States, several considerations present themselves, apart from the mere question of direct annual profit or loss on a given investment in Sheep and in land for their subsistence. The more immediate and obvious profit is doubtless the first question; but in regarding the general advantages or disadvantages of this branch of husbandry—particularly in a region circumstanced in all particulars as the Southern States are—we are farther to consider the practicability and comparative economy of making it the basis of an effectual amelioration in soils naturally sterile, or those which have been rendered so by excessive and injudicious cultivation; and its comparative efficacy in giving to Southern Agriculture a mixed and convertible character, and thereby sustaining (or improving) all the present good tillage lands, in the place of continuing the “new and old field” system—(tilling land until it is worn out, then abandoning it and opening new lands,)—once so general, and even now by far too prevalent. And there is another point of no mean importance: whether, independent of preceding considerations, and even if the staples furnished by sheep husbandry proved no more profitable, in direct returns on capital invested, than some of the present staples, it would not be better economy, on the whole, for the South to produce the raw material and manufacture domestic woolens, particularly for the apparel and bedding of slaves, than to be dependent for them on England or Massachusetts.

To ascertain the direct and immediate profit on investment in sheep husbandry, let us appeal to well settled facts and statistics, instead of contenting ourselves with vague and general propositions. For the following Table of the average prices of good wool* in the State of New-York, which was published in my replies to Mr. Walker's “Treasury Circular” in

* Such wools as are used for the manufacture of broad and other cloths of good quality—ranging, say, from 2th blood Merino to pure Saxon—excluding native, grade (below 2th Merino), and all English wools.

1845,* I was indebted to a most respectable and extensive purchaser of wool, and its accuracy is beyond question.

TABLE No. 7.

| Year. | Average price per pound. | Year. | Average price per pound. |
|-----------|--------------------------|-----------|--------------------------|
| 1832..... | 40 cents. | 1839..... | 50 cents. |
| 1833..... | 50 do. | 1840..... | 33 do. |
| 1834..... | 45 do. | 1841..... | 35 do. |
| 1835..... | 48 do. | 1842..... | 30 do. |
| 1836..... | 54 do. | 1843..... | 31 do. |
| 1837..... | 30 do. | 1844..... | 49 do. |
| 1838..... | 36 do. | 1845..... | 32 do. |

It will thus be seen that for a period of fourteen years preceding 1845, the average price of good wools was 39 $\frac{1}{2}$ cents per pound.†

The average weight of fleece in sheep yielding this wool has been about 3 lbs.; the pure-blood Saxons less; but those bearing the coarsest wool included, in the average, more.

The average price of sheep of the quality under consideration, has been not less than \$2 per head in the fall, and lambs half that price.‡ The annual increase in lambs would be about 80 per cent., or if less by reason of the number of wethers in the flock, the *growth* of the latter would give a corresponding increase in profit. One hundred sheep, properly littered, will make at least forty loads of manure during the one hundred and fifty days during which they are confined to dry feed, in our Northern winters.

The grazing lands of New-York, cut up as they are into small farms,|| and each being provided with dwelling and farm buildings, are worth from \$15 to \$30 per acre. Prime sheep lands will average about \$20.§

In relation to the amount of land necessary to support a given number of sheep, the experience of a good many years has satisfied me that the rule commonly laid down on the grazing lands of New-York and New-England, that, on the average, one acre of land will give subsistence to three fine-wooled sheep throughout the year, is an accurate one.¶ On grain farms, it is considered good economy to keep one sheep for every acre of cleared land which the farm contains; on those where mixed husbandry is practiced, two; and, on those exclusively devoted to sheep, three.

In the following, and all similar estimates, I shall reckon the profits on the *land* and *expenditures*, instead of the *land* and the *commonly quoted prices* of grass, hay, &c., consumed. These prices, in the interior, are

* See Report of the Secretary of the Treasury, 1845, p. 461. I thought, and so stated to Mr. Walker, that the Table placed wools about 1 $\frac{1}{2}$ cents per pound too high. But subsequent information has convinced me that I was in error. In my statement of the *average* profits of sheep husbandry, in those replies, I estimated the average price of wool by the prices paid by a local and much smaller purchaser, and for a comparatively limited term of years. I was not then aware of the utter defectiveness of the U.S. Census returns (pointed out in Letter II.) in relation to the annual product of wool, and therefore was misled in the average weight of fleeces; and, speaking from impression rather than experiment, I placed the value of the manure altogether too low. Those questions and replies have led me into experiments and inquiries, which have resulted in more accurate information. I allude to this subject, because I think it every man's duty to correct any errors or explain any discrepancies subsequently discovered by him, in his statements which have been thrown before the public, and thus are placed in a position to mislead.

† During 1846 it was from 30 to 32 cents per pound, but as this estimate is not based on extensive purchases, like the preceding, I have not placed it in the table.

‡ Including *grade* sheep, which form the greatest proportion of the whole number. There have been very few pure-blood Merinos in the State, and many of the Saxon flocks have been so miserably deteriorated in carcass and weight of fleece, that they have sold for low prices. But *good* Saxons sold much above this until within three or four years; since then, the Merinos have been rapidly driving out the Saxons, and those of good quality and undoubted pedigree have sold for from five to twenty-five times as much. The higher the price, the greater the profits, by reason of the value of the increase.

§ It would be my impression that the farms in the grazing regions do not, on the average, exceed 130 acres each.

¶ I do not, in the grazing region.

¶ I say "fine-wooled sheep," because the larger and coarser Downs, Leicesters, Cotswolds, &c. consume much more, as will hereafter be shown.

merely nominal, as they cannot be obtained for beyond a small portion of the annual crop. They do not, therefore, form a proper basis for correct general estimates.

The expenses and losses in keeping sheep, not already alluded to, are all set down below, as high as they will average on well managed farms.

| Dr. | \$ cts. | Cr. | \$ cts. |
|--|---------|--|-------------|
| 100 Sheep to interest on purchase money..... | 14 00 | By 300 lbs. of Wool, at 39 47 cts. per lb. 11* | 71 37 |
| To int. on 33½ acres of land at \$20 per acre..... | 46 66 | " 80 lambs at \$1 per head..... | 80 00 |
| " curing and storing hay on 11 acres of above..... | 13 75 | " 40 2-horse loads of winter manure at | |
| " expense of shearing..... | 4 00 | 50 cents per load..... | 20 00 |
| " salt, tar and summer care..... | 4 00 | " summer manure, calling it only equal | |
| " labor of foddering, &c., during winter, say..... | 5 00 | to shearing and summer care..... | 8 00 |
| " loss by death 2 per cent. above the value of | | Total..... | \$226 71 37 |
| pulled wool..... | 4 00 | Balance..... | \$135 30 37 |
| Total..... | \$91 41 | | |

Making the net profit of \$1 05, or 20¼ per cent. per acre on lands worth \$20.

Since the passage of the Tariff of 1846, there has evidently been a panic among the wool-growers of New-York, and the rise in bread-stuffs, beef, pork, and dairy products, occasioned by the change in the British Tariff, and the famine which has prevailed in Europe by reason of the short crops of 1846, has tended farther to depreciate sheep, by offering inducements supposed to be very strong, to embark in branches of husbandry furnishing the former staples.† Sheep are consequently cheaper than they ever were before. Prime *grade* sheep, bearing wool of as good quality as the average of that embraced in Table 7, have in some instances sold for ten shillings per head, and coarse common sheep for one dollar—lambs half a dollar—making, in the ordinary proportion between lambs and grown sheep, about 75 cents per head, taking a flock through!

Wool of the quality embraced in Table 7 has fallen to an average of say 31 cents. Under the impression that sheep and wool have reached their minimum prices,‡ it becomes an interesting subject of inquiry whether they can yet be produced, at a profit, in New-York. The following figures, I think, will fairly show:

| Dr. | \$ cts. | Cr. | \$ cts. |
|--|---------|---|----------|
| 100 Sheep to interest on purchase money, at | | By 300 lbs. of Wool, at 31 cents per pound..... | 93 00 |
| \$1 25 per head..... | 8 75 | " 80 lambs, at 62½ cents per head..... | 50 00 |
| To int. on 33½ acres of land at \$20 per acre..... | 46 66 | " 40 2-horse loads of winter manure, at 50 | |
| " cutting, curing and storing hay on 11 acres | | cents per load..... | 20 00 |
| of above..... | 13 75 | " summer manure, calling it only equal to | |
| " expense of shearing..... | 4 00 | shearing and summer care..... | 8 00 |
| " tar, salt and summer care..... | 4 00 | Total..... | \$171 00 |
| " labor of foddering, &c. during winter, say..... | 5 00 | Balance..... | \$86 34 |
| " loss by death 2 per ct. above the value of | | | |
| pulled wool..... | 2 50 | | |
| Total..... | \$84 66 | | |

Making \$2 59, or nearly 13 per cent. *net* profit per acre on lands worth \$20.

In the preceding estimates I have only regarded the profit of sheep husbandry, as it has averaged for a series of years, among those possessing *good ordinary* flocks.

* I place the summer manure, undoubtedly, considerably below its actual value. No experienced farmer will say that good solid sheep manure is worth less than 50 cents per load, and as the summer manure is at least equal in quantity, and is deposited immediately on the land, I see no reason why it is not equally valuable.

† That the diminution of English duties on these staples will give them a better and steadier market, there can be little doubt; but not the *very high* one of the past season, occasioned by the severe famine which has prevailed in many parts of Great Britain. Many, therefore, who have sacrificed their sheep, reckoning on such prices, will probably find that they have "reckoned without their host."

‡ I say this under the decided impression that our wools, at this price, if properly washed and put up, would triumphantly compete in the foreign markets with those of the wool-growing nations of Europe; and even with those of Australia, the Cape of Good Hope, and other Austro-oriental regions. For a more full examination of this point, see Appendix D.

It falls far short of that realized by breeders and flock-masters, who started their flocks with the best pure-blood sheep then to be found in the country; and who have subsequently continued to improve them by great care in breeding, and by a rigorous course of selection.

I have bred Merino sheep for a number of years, and latterly in considerable numbers; and in no case have my grown sheep averaged less than 5 lbs. of well washed wool per annum. The quality of the wool may be inferred from a comparison of the prices at which it has sold, with those in Table 7. In 1846, I sold for 35 cents per pound; in 1845, for 33 $\frac{1}{3}$ cents; in 1844, for 48 cents; in 1843, for 33 $\frac{1}{3}$ cents; in 1842, for 35 cents, and so on.

To give more precise data, I select the following statement of the products of a flock, on which I drew the first premium offered by the New-York State Agricultural Society for "the best managed flock of sheep," in 1844:

[From the Transactions of the N. Y. State Agricultural Society, 1844, p. 251.]

"In the winter of 1843-4, I wintered in a separate flock fifty-one ewes over one year old, two ewe lambs, two rams, one of them one and one of them two years old. Of the ewes over one year old, twenty-eight were full-blood Merinos; twenty-three were half-blood Merinos and half-blood South-Downs; the two ewe lambs were three-fourth-blood Merino and one-fourth-blood South-Down; and the two rams were full-blood Merinos. The flock were kept as follows through the winter: They were fed hay morning and night, and were, as a general rule, required to eat it up clean. At noon the flock were daily fed three bundles of oats and barley (which had grown mixed, say three parts oats and one part barley,) until the 25th of December—after which they received four bundles of oats. The grain was light and shrunken. They received no hay at noon during the winter, and usually consumed all the straw of the grain fed them. They had a good shelter, and access to pure water at all times. From this flock I raised fifty-three lambs. The full-blood Merinos, including two rams, and the two three-fourth-blood lambs, (in all thirty-two,) sheared one hundred and eighty-six pounds and four ounces of washed wool, which I sold at forty-eight cents per pound. Four of the full-bloods had two years' fleeces on. The half-blood Merinos and half-blood South-Downs (twenty-three) sheared eighty and one-half pounds of washed wool, seventy-one pounds of which I sold at thirty-eight cents per pound. During the summer of 1844, the flock were kept in good ordinary pasture, and salted once a week."

Thus, the Merino fleeces averaged 5 lbs. 13 $\frac{1}{2}$ oz. and sold for \$2 79 $\frac{3}{4}$ each; and the grades between Merino and South-Down averaged 3 lbs. 8 oz. to the fleece, and sold for \$1 33 each.

It will be observed that four of the full-bloods (they were ewes) had two years' fleeces on. A two years' fleece will not weigh as much as two single years' fleeces from the same sheep. On the average, it will weigh about three-quarters as much.* On the other hand, the lot included two three-quarter-blood lamb fleeces, which would fall below the average weight of the others, and a portion of the flock were yearlings and two-year olds. The Merino never attains its maximum weight of fleece before three years old, and ordinarily not until four, and therefore the aggregate weight of wool of the 32 sheep, given above, does not, to say the least of it, give too favorable a view of the product of sheep of this quality. This is proved by the fact that my entire flock of full-bloods sheared about three-twentieths of an ounce over six pounds each, the succeeding year.

It would give me great pleasure to subjoin similar statistics of other carefully bred flocks, were authorized statements of them in my possession, or published within my knowledge.

It is sufficiently apparent from the above facts and estimates, that wool has not yet reached the lowest point at which it can be produced at an ample profit, on lands of the value indicated, *if the sheep are of the proper*

* That is to say, if the single years' fleeces would equal 6 lbs. each, a two years' fleece, instead of weighing twice as much, or 12 lbs., will not exceed three-quarters of such aggregate weight, or 9 lbs. The wool wastes when it becomes so long, and perhaps does not grow so rapidly.

quality; and these facts farther suggest the expediency of relying on our own efforts to "protect" this interest, rather than the fickle support of National legislation.

For the production of a cheap, wholesome, and highly nutritious food, no animal excels the sheep. Theoretical considerations, as well as experiment, show the superiority of mutton to pork in the formation of vigorous muscle;* and its tendency is less, particularly in hot climates, to engender inflammatory and putrid diseases. The consumption of considerable quantities of fat is indispensable, in cold climates, to supply the necessary amount of carbon to support "combustion," as Liebig terms it, in the lungs, or, in other words, to maintain the animal heat. Hence the Laplander and the Esquimaux find a grateful diet in train-oil, or the adipose parts of Arctic fish and mammalia. That fat pork should be the favorite meat, in the Northern States, is not perhaps so singular, but that it (under the name of bacon) should constitute the principal one consumed in our warm Southern latitudes, and especially that it should constitute so large a proportion of all the food consumed,† is indeed a most anomalous fact, and is utterly unparalleled among the practices of other nations occupying the same latitudes. The tendency of this practice to produce disease, physical inertia, indisposition and incapacity to sustain continued activity, will not, I think, be questioned by the pathologist or the close observer.

Mutton and lamb are a favorite, if not *the* favorite food of the English of all classes. Notwithstanding all that has been said and written of the "roast beef" of "Old England," mutton is more eaten there by people of every rank.‡ On the other hand, it is evidently *not* a favorite meat in the United States, though its proportionable consumption is evidently increasing. Whence the difference? Circumstances have led to habit, and habit, in a great measure, regulates appetite. It needs no other proof than is to be found in the experience of every individual, to show that the appetite is readily trained to relish what was even positively disgusting, and to become indifferent to what was once the most grateful.

That the preceding facts are well worthy of attention among those who are favorable to the introduction of sheep husbandry, among planters who supply not less than 3 lbs. per week of good bacon, or a full equivalent, to each slave, on plantations where the number ranges from ten to one hundred, and sometimes many more, there can be little doubt. Twenty-five slaves would thus consume 3,900 lbs. of bacon per annum; and the more common allowance of the opulent planter is about 200 lbs. per head, or 5,000 lbs. for twenty-five. If an equivalent for at least half of this was

* The theoretical considerations will be found sufficiently discussed in Liebig's "Animal Chemistry." For experimental evidence, I know of none that can be more depended on—which approaches any nearer actual demonstration—than that which is furnished by the English prize-fighters. To attain the proper condition to sustain the protracted and tremendous exertions of their brutal trade, their flesh must attain the hardness and toughness of whipcord, and they must, at the same time, maintain that physical elasticity (technically, "corkiness") which adds agility to iron strength. These men, while training, are suffered to eat little or no adipose matter, and not even the *lean* of pork. Their animal food is exclusively beef or mutton, or both. Some trainers prefer the former, some the latter. I have seen this matter very fully alluded to, but do not now remember any more explicit authority than that contained in the following note to Carpenter's Principles of Human Physiology. (p. 357.)

"The method of training employed by Jackson, (a celebrated trainer of prize-fighters in modern times,) as deduced from his answers to questions put to him by John Bell, was to begin on a clear foundation by an emetic and two or three purges. Beef and mutton, the lean of fat meat being preferred, constituted the principal food; veal, lamb and pork were said to be less digestible ('the last purges some men'). Fish was said to be a 'watery kind of diet;' and is employed by jockeys who wish to reduce weight by sweating."

† I mean this portion of the remark to apply more particularly to the non-laboring classes. The proportion consumed by the slave, though ample, is not excessive, when his laboring habits are taken into consideration.

‡ I state this on the authority of various individuals who have been much in England, and who have been placed in positions to form a pretty accurate opinion. Mr. Colman speaks of the "extraordinary" consumption of mutton in England, without, however, giving any comparative data.

made in mutton, it would be far cheaper, and, if I have not erred in previous statements, better for the slave.

There are two or three other highly favorable considerations to be taken into account among the direct profits of rearing sheep.

The risk by death, by ordinary causes, is nothing. Two per cent. is allowed in the preceding estimates, as the full product of wool and increase is carried out. But, in reality, the sheep never dies "insolvent." If the colt or the bullock dies on our hands, after two or three years of trouble and expense with it, the loss is nearly a total one. If the fine-wooled sheep dies at any age, the wool then on it, or what it has already produced, more than covers all the cost which it has ever made us.*

Not only is the winter manure of the sheep superior to that of any other domestic animal, the hog and fowl excepted, but it practically becomes still more so in proportion, in summer, when scattered over the pastures, by reason of the conditions in which it is deposited. The soft porous excrements of the cow† or horse, exposed to the exsiccating action of sun and wind, evolve most of their fertilizing properties into the atmosphere, and this effect would increase in proportion to the warmth of the climate. The excrements of the sheep, on the other hand, are deposited in small, hard, rounded pellets, which fall down between the leaves of the grass, and are thus in a great measure protected from the sun and wind, until they are trodden into and incorporated with the soil.‡ Then, again, they need no spreading,|| like the dung of the horse and cow. And finally, instinct, in leading the sheep almost invariably to seek the summits of the elevations, in warm weather, for its night quarters, leads it to deposit much more manure in proportion, where it is most needed, on the drier and more barren hill-tops; and where, being more remote from water-courses, less of its juices are liable to be washed away by rains, into the streams, or on to the lands of others.

Sheep are also far more efficient than any other animal (if we except the worthless goat) in clearing up new lands, or neglected old ones, of those briars and shrubs which it is often difficult to eradicate without plowing; and they often abound on lands which cannot be plowed with profit. And, when plowed, the shrubs in the fence corners must be left (to the utter shame of all good husbandry), or the fence must be removed—sometimes at a great inconvenience. The sheep delights to browse on the buds, and to strip the bark of most shrubs,§ and they thus soon destroy them. It would be good economy for the farmer to keep his neighbors' sheep, without charge, on all very briery or coppiced unarable lands, if he could not so stock them himself.

Finally, it is generally believed by experienced flock-masters—and observation has led me to fully coincide in the opinion—that sheep not only improve the lands they depasture more than any other animal, but that they exert an almost specific influence in improving *the character of the vegetation*. All wild, poor grasses gradually disappear from their pastures

* I speak, of course, of the cost of rearing and feeding.

† Gaggeri found that 100 parts of recent cow-dung contain 25 per cent. of dry, solid matter, and that 5 per cent. of this is lost in 40 days by exposure to the air. I do not think *this* indicates the full loss which would be sustained in a southern latitude.

‡ These rounded pellets are covered, too, in the animal in good condition, with a coating of mucus, which farther protects them from evaporation.

|| Their urine, also, is voided in quantities which render it highly beneficial; while that of the horse and cow is voided in such large quantities in one place that it is not only in a great measure wasted, but in a dry time (so that it is not diluted by the moisture in the soil), its rich salts, so far from benefiting, actually kill the verdure.

§ This is particularly true of the blackberry or bramble (*Rubus villosus*), and the raspberry (*Rubus idaeus*), often great pests on new or neglected lands at the North. Sheep can even be made to attack the elder (*Sambucus canadensis* var. *pubescens*), and various other troublesome intruders, by turning them upon them in thawing "spells," in the winter, after they have been for some time confined to dry feed.

and are succeeded by the best ones; and the sward becomes remarkably dense and even. This is probably due to the richness and better distribution of their dung and urine.

If upward of twenty per cent. profits, over and above all expenditures, have been and still can be made, on lands worth \$20 per acre, by wool-growing—on lands, too, where the reign of an iron winter confines sheep to dry feed at least five months of the year—how are we to estimate those profits on lands costing but a small part of this sum, which, though inferior to the former, will, by reason of the shortness and mildness of the winter, support about an equal number of sheep per acre, and also save the expense of preparing dry feed, of foddering, and a large proportion of that laid out in barns, shelters, &c.?

It will be seen that, by assuming the data of the last of the two preceding estimates (with the exception of the loss by death), the gross cost of producing 300 lbs. of wool, on the grazing lands of New-York, is \$82 16, or 27 $\frac{2}{3}$ cts. per pound. This is undoubtedly as *low* as it can be produced where the fleeces do not exceed the average weight of 3 lbs. Let us now proceed to inquire what would be the gross expense per pound in the Southern States.

You inform me that “one or two—not more—”^{*} sheep find subsistence during the summer on the *natural* pastures of the *tide-water* zone in South Carolina.* The broad-tailed, and other large breeds, now mainly fed there, consume nearly double the amount of feed required by the fine-wooled sheep. But, to make our estimate perfectly a safe one, we will assume that two fine-wooled sheep only will consume the summer herbage of an acre. Fields of rye sown in September or October, you farther inform me, will support “two sheep and their lambs” per acre, “from the 20th of December to the 10th of March.” Numerically, then, here you have the same stocking that is borne by the lands of New-York, viz. three sheep per acre. And, making the allowance already alluded to for the different consumption of breeds, an acre would sustain three full-grown Merino sheep. As the rye subsequently yields its crop, the wool is not chargeable with the expense of its tillage.

Rye will continue to grow in the winter on all lands not too sterile, or too elevated, south of latitude 36°, and, in favorable situations, at least two degrees farther north. Grass, and some other hardy esculents, also maintain a winter vegetation in many portions of the whole of this region.†

R. L. Allen, Esq., after a recent visit to the plantation of Col. Wade Hampton, near Columbia, S. C., thus speaks of the winter verdure in that region:

“Though everything like grass or weeds is rigidly excluded in the early stages of the crops, yet, as these approach maturity, the thick netting of crab and various other grasses and plants, which are ever struggling for existence in this warm clime, are allowed to come forward and mature; and their growth furnishes forage for cattle and sheep during the winter, and an important addition to the vegetable manures for turning under and adding to the fertility of the soil. . . . The sheep, together with the cattle, mules and horses, which are not at work, are turned into the natural pastures in summer, and, in addition to these, they have the run of the corn-fields in winter, and without seeing any other shelter against the severest storms than a thicket or hill-side, they thrive and fatten throughout the year.—This condition is secured by the mildness of the climate, and the consequent growth of vegetation during the entire winter.”

* [These statements, and all others credited to Col. Allston, are, when not otherwise specified, contained in letters from that gentleman to the writer.]

† Among these, “a plant called ‘Wild Rye,’ affording excellent herbage during the winter months, springs up spontaneously on the rice-field banks, and between the cotton beds, on some plantations on the River Congaree, S. C.”

John S. Skinner, Esq., thus writes me :*

"Col. Hampton's flock numbers 300, I believe. He kills the finest sort of mutton through out the winter and spring—very fat and excellent in all respects. He told me last summer, at Saratoga, that they never get a mouthful except what they can find in the woods and fields."

Hon. R. F. Simpson, Member of Congress, of Pendleton, South Carolina, thus describes the region in which he resides, and some of the contiguous ones:†

HENRY S. RANDALL, Esq.

WASHINGTON, Jan. 22, 1847.

Dear Sir : I take much pleasure in answering your inquiries, and only regret that I have not more time to do full justice to the subject. If my answers fail to inform you with sufficient clearness on any point, I shall be most happy to add to them, at your suggestion.

The Alleghany Mountains, as you are aware, run from N. E. to S. W. That part of them north of the S. C. line lies spread out in different chains or ridges to a distance of nearly 50 miles; and the whole region is commonly called "on the mountains." The climate is healthy and the grass fine. Many of the valleys in this region are very rich, particularly on the water-courses. The ground is covered with snow as much as four weeks annually. The range is good, but there may be too much humidity for sheep.‡ The land is cheap, say \$1 per acre—but much can be bought at 50 cents. I have learned from good authority that sheep can be farmed out during the winter at *ten cents a head*, in any ordinary quantity. The farmers who take them, too, will be liable for loss by death, in many instances.

There is a strip of country lying east of the Blue Ridge, and parallel to it, from 20 to 30 miles wide, extending through North and South Carolina and Georgia, which I think especially adapted to sheep husbandry. The land is poor for the production of our southern staples, and is sparsely settled, but the pasturage is good. There is a perennial grass, known as "woods grass," which springs up in the woods after they are burned each winter, which makes excellent pasture for all kinds of stock. It starts vigorously in the spring, and sheep fatten on it by the middle of July. It lasts all the summer, and provides sufficient food for sheep during the entire winter, except when snow is on the ground, which is not more than two or three days at a time, and usually not more than ten days during a winter.

The few days during which the grass is covered up with snow are the only ones, during the entire year, when it is necessary to feed sheep. This is usually done with oats in the sheaf. . . . Supposing ten sheep equal to one cow, I think one acre would afford subsistence to three sheep.

But few people mow here. In a few instances, herds-grass has been sown and mowed, but the product not weighed, to my knowledge. Both herds-grass and the natural ones, on our bottom lands, look much richer, and to all appearance would turn off a heavier crop of hay than any meadows to be seen on the line of travel through Virginia.

As I have before remarked, the land is poor, except the small bottoms on creeks and branches. The latter are rich, and will produce 30 bushels of corn and from 10 to 15 bushels of wheat per acre. They also produce oats and rye, but I do not know how much by measurement. I suppose from 10 to 20 bushels each. The land is valued low—from 50 cts. to \$1.50 per acre—and it is only necessary to buy \$500 or \$1,000 worth of it, to embrace sufficient bottom to raise provisions, and oats to feed sheep when snow is on the ground.—The range is very large, and everybody's stock has liberty to roam over it, without hindrance or compensation.

Our common method of managing sheep is as follows: The flock are kept in the plantation during the winter by some; others turn out in the woods. In May they are sheared, the lambs marked, &c., and they are turned into the out pastures. When they come up, they are salted, and no other attention is paid to them until fall, when most persons *shear again*. They are rarely brought up unless to get a lamb for the table. This treatment renders them wild, and prone to jump into the owners' or neighbors' wheat fields, from which they are driven out with rocks and sticks, and sometimes with dogs. They are, in all re-

* Jan. 15, 1847.

† This letter would have been more appropriately included in my IVth Letter, but was not received in time, and it is by far too valuable and interesting to be omitted.

‡ The effect of *humidity* on sheep is, I think, often misunderstood and greatly exaggerated. Wet, cold soils are uncongenial to sheep, but they suffer no more from those ordinary fogs and vapors which prevail in insular positions, or which are attracted by mountain ranges, than other domestic animals. As has been before remarked, sheep thrive in the peculiarly foggy atmosphere of England—also in Holland. Their healthiness on mountains is proverbial, yet these elevations are usually subject to fogs, and clouds rest on the sides or summits of the loftier ones. As the southern mountains are cleared of their trees, their atmosphere will be less humid, and that soft vegetable mould (which excited the fears of Mr. Buckley) will acquire the consistency which it always does on a *dry* foundation, when exposed to the sun and air; and it will be the means of supplying the sheep with rich vegetable nutriment, instead of poisoning them with "hoof-ail."

§ The provincial signification of this word, South, is the uninclosed pasturage in the forest and "out fields,"—i. e., worn-out lands thrown out to commons.

spects, treated more like outlaws than domestic animals. When out, all the flocks in the neighborhood mingle together. From their disposition to ramble, and the incursions of dogs, they get scattered, and scarcely any farmer can get up to the fall shearing more than one-half of his count.

The region above described includes Pickens, Greenville and Spartansburg, so far as this State is concerned. Going east of this strip, you at once get into good land, where the settlements are frequent. Here snow is rare, and wheat, rye and barley are used for winter pastures for sheep, and they continue growing during the winter. Wood grass does not abound in this region, as the woods are not kept burnt.*

Very respectfully, yours, &c.

R. F. SIMPSON.

The preceding statements give a sufficient idea of the expense of feeding sheep in the Carolinas, Georgia, and the Gulf States. In all of these, there is a striking similarity in soils and natural products, and also in climate—with, perhaps, the exception of North Carolina, which is a trifle colder. In all of them, as well as in all the other Southern States, land can be bought at the same low prices.†

The cost of the winter fodge of sheep in Tennessee may be inferred from the statements of Mr. Kramer, (in Letter IV.) On even the lofty Cumberland Mountains, in that State, grass grows during the entire winter, and snow rarely covers the ground to exceed forty-eight hours! Judge Beatty's statements in relation to Kentucky (in the same letter) show that the luxuriant blue-grass pastures of that State will sustain sheep during the entire winter; and that they frequently obtain their whole subsistence on the grasses, even on the mountains. Let us now turn to Virginia, the most northern of the Southern States. In a recent letter to me, John S. Skinner, Esq. says :

"Hon. Mr. Coles, a Member of Congress from Virginia—a sedate, attentive and practical farmer—once informed me that his flock of 200 sheep, kept in good condition summer and winter, did not cost him \$10 a year. . . . You must know that they, in the general way, as I believe, never feed their sheep, winter or summer, except where the ground is covered with snow—which is rarely the case, and then the snow does not lie more than a day, or at most two days. . . . No doubt winter pasture might be provided by sowing rye in the proper season (the usual system is to sow it the last thing, and as long as the farmer can "catch a chance") and putting the ground in good condition; and in that way adequate provision might be made for any deficiency of natural pasture. . . . When the snow does cover the ground in Virginia, they give the sheep corn-blades—an excellent fodder. I think the rule was when I was a boy (in the rare exigency alluded to) to give them a bundle of blades each. A bundle of blades compacted would be about as large as the upper part of your arm."

North-Western Virginia seems to be considerably colder than the corresponding portion of the State east of the mountains; and the winter foddering season is not greatly shorter—though the amount of fodder consumed *must* be far less—than in Western Pennsylvania, or in many portions of New-York.‡ Yet, singularly enough, more sheep are bred here in proportion, probably, than in any other portion of the Southern States!

* Some other paragraphs from this letter are omitted for quotation under the heads of which they specifically treat.

† Hon S Strong, a Member of Congress from this (N. Y.) State, writes me, after consultation with various Southern Members, that "good lands may be purchased for \$1.50 per acre, and in great abundance, in most of the Southern States."

Mr. Garret Andrews, of Wilkes Co., Georgia, in a communication in the American Agriculturist (April, 1811), says: "Several hundred acres (in the middle or hilly zone) are often sold for a dollar or less per acre. The usual rule is to sell the wood-land for what it may be thought to be worth, and give the purchaser the old lands and the houses for nothing. . . . For \$1,000 or \$1,500, a comfortable house and out-houses, garden, &c. may be had, with several hundred acres of land, . . . wanting nothing but a fair chance to become as fertile as may be desired. . . . There is no end of the materials for manure."

I recently saw it stated by a gentleman in a communication which was published in the N. Y. Farmer and Mechanic, that he was authorized to give away good land in the Cumberland Mountains to sober and industrious settlers.

The prices in the N. C. Mountains will be seen from Mr. Clingman's letter, (Letter IV.)

‡ Mr. Coles resided in Pittsylvania, a county adjoining North Carolina, in the middle or hilly zone.

§ Jesse Edgington, of Holliday's Cove, Brooke Co., Va., writes me: "Our average time of foddering is at least 4 months, and we generally provide provender equal to 5 tons of hay for each hundred grown sheep, for the winter."

This region being essentially Northern in its characteristics no allusion will be had to it in subsequent remarks.

It will be seen from the preceding statements that in many, if not most situations, throughout the whole Southern States, sheep will obtain sufficient food throughout the year from the pastures,* or from autumn-sown grains, excepting on the higher or more northern mountains. As has been before remarked, as the grain subsequently yields its crop, its tillage is not properly chargeable among the expenses of producing wool. The preparation of hay, and labor of foddering, are also dispensed with. By the rule of estimation followed in relation to New-York, the items on the debit side of the account would then be—interest on purchase money; interest on land; expense of shearing; salt, tar, and general supervision; and loss by death. The items on the credit side would be the same with those of New-York.

Your own statements, Sir, as well as those of Mr. Simpson, show that, in many situations, both in the tide-water and hilly zone, three sheep can be supported on the herbage of an acre, without other fodder. His statements show that such lands can be bought at "from 50 cents to \$1 50 per acre." The annual account then would stand thus:

| Dr. | \$ cts. | Cr. | \$ cts. |
|--|---------|--|----------|
| 100 sheep—to interest on purchase money, at \$1 25 per head..... | \$8 75 | By 300 lbs. of wool at 31 cents per pound..... | \$93 00 |
| To interest on 33½ acres of land at \$1 50..... | 3 50 | " 80 lambs, at 62½ cents per head..... | 50 00 |
| " expense of shearing..... | 4 00 | " Manure†..... | 28 00 |
| " salt, tar, and general supervision..... | 8 00 | Total..... | \$171 00 |
| " loss by death 2 per cent. over and above value of pulled wool..... | 2 50 | | |
| Total..... | \$26 75 | Balance..... | \$144 25 |

Making \$4 32, or *two hundred and eighty-eight* per cent. clear profit per acre, on lands worth \$1 50!

By the respective estimates it will be seen that the gross cost of producing a pound of wool (allowing 3 lbs. to the fleece) is, in the Southern States, $8\frac{1}{2}$ cents; in New-York $27\frac{2}{3}$ cents‡—or *nearly three and a half times* greater in the latter! I have put down the expense of shearing the same in both cases, and the supervision, South, twice as high as the *summer* care, in the North. Shearing always costs \$1 a day, per hand, in the North, and the summer care devolves upon the paid laborer whose every hour counts. The shearing would not be worth to exceed \$2 a hundred on a plantation where slaves are kept, and the supervision or care could scarcely be considered an expense, when it could be borne mainly, if not entirely, by superannuated or decrepit slaves, or even by children. The real expense of growing wool on land of this quality and price would be about $5\frac{1}{2}$ cents per pound;|| and calling the fleece 4 lbs. (which weight it always *ought* to be made to attain) it would but little exceed $3\frac{1}{2}$ cents.§ This is above Mr. Coles's estimate of expense in southern central Virginia, and Mr. John S. Skinner has repeatedly expressed the opinion that it could be grown in various parts of the Southern States at 3 cents per

* This supply could be rendered far more certain and available, where desirable, by leaving a portion of the fields undepastured in the latter part of summer and autumn. This "fog" or after-grass would not only afford much food, of itself, but it also greatly favors the sprouting of the young grass underneath it, by the protection it offers from frosts and cold winds.

† I have put this down the same as at the North, because I suppose it is just as valuable at the South, and quite as much needed. Few are disposed to appreciate the value of manure when it is not presented to their view in bulk, as in the barn-yard; but it is worth quite as much, dropped in the first instance over the fields. I feel confident that I have not over-estimated its value either for the South or the North.

‡ To obtain these results, I divided the whole annual expense, as set down in the respective estimates, with the exception of the charge of 2 per cent. for loss by death, by the amount of wool produced. For reasons already given, I do not consider the wool chargeable with such loss by death, except in an estimate where the full product of wool and lambs is carried out.

|| In this estimate I call shearing \$2 per hundred, salt and tar \$1, and supervision nothing.

§ Estimated as in the preceding note.

pound.* My own impression, however, is that the land, properly inclosed, that will support 3 sheep per annum, will cost, except in occasional localities, not less than \$4 or \$5, let the amount be more or less; and this would bring the cost of production (with 3-lb. fleeces) to between 7 and 8 cents per pound. I shall hereafter assume it to be 8 cents.

On many of the more northern mountains of the Southern States, and on the high peaks farther south, neither the grasses nor grain grow sufficiently to support sheep, unless the range is very large in proportion to the number, during the winter.† Here, as in the Northern States, dry feed must be prepared for the winter subsistence of sheep. This can be readily done, as the best meadow grasses of the North and the clovers flourish on the sides of the mountains.‡ There is little doubt that sheep can be wintered on dry feed on many of the mountains, and yet, on account of the extreme cheapness of the lands, the cost of producing wool not exceed eight cents per pound.

In the circumstances of many of the lowland plantations, it would be a most economical arrangement to summer the sheep on the mountains, and then drive them to these plantations to be wintered on pasture, fog, or grain fields, according to convenience. After the lambs have reached a sufficient age in the spring, and the sheep are shorn, marked, &c., a flock might be sent thirty, fifty, or even a hundred miles to its summer range on the mountains, at a trifling expense; and large numbers could be kept there under the surveillance of a single shepherd and a brace or two of dogs. By this system the lowland plantation would be saved from maintaining pasture on more expensive lands; many of its less marketable products could be converted into wool, meat, and manure; and it would be enriched by the wintering of the sheep.

Such, you are aware, is the system of sheep husbandry in Spain. The sheep are wintered on the plains of Estremadura, sometimes reaching the north of Andalusia. Both of these provinces, though in a latitude corresponding with that of a portion of the United States, extending from Albemarle Sound to a little north of Philadelphia, are parched, during the summer, to a state of arid sterility, by the burning winds of Africa.¶ In

* See Monthly Journal of Agriculture.

† With sufficient range, however, they not only obtain subsistence, but get fat. John S. Skinner, Esq., writes me: "In the mountains of Virginia, viz., at the Warm Springs, Dr. Brockenbore told me that a flock of sheep which he had bought for use during the watering season, strayed, and got off beyond reach during the summer; that the winter after they were rarely seen; and that as chance offered they were shot; and that finer and fatter mutton he never desired to see." The Warm Springs are in Bath county, among the Western or Allegany Mountains, a few minutes north of latitude 38°.

‡ See Mr. Goggin's statements in Letter IV. Since the above was written, I have received the following statements from Mr. W. Murdock, of Asheville, Buncombe county, North Carolina:

"Excellent swards of grass are grown in this district from Orchard grass or Cock's-foot. Timothy and Italian Rye grass I have found to thrive remarkably well. I never saw them do better in any country. I received my seeds from England, and they succeeded admirably, and in ground by no means favorable to a fair trial. Turnips succeed remarkably well here, and even 150 miles further south, as I am informed by Mr. Edward Calhoun—the kinds I don't know—but here the Globe, Aberdeen, Norfolk, &c., do well. . . . If grounds were reserved as you suggest, for the winter feeding of sheep, the fall growth being under-pastured, and if some of the stubbles were plowed up and sown broadcast with turnips mixed with rape or colza, very little fodder will be required, in fact only when snow is on the ground, which seldom exceeds fifteen or twenty days during the year." [This fully confirms the positions assumed by me near the close of Letter IV.]

"I think that Curled Kale would be excellent for the winter keep of sheep, or cattle of any kind. I got some seed from England and sowed it like any cabbage seed. I put out the plants two feet asunder in but tolerable ground. It grew three feet high and two feet in diameter. That I planted in the open field the sheep got at in October, and ate it, stock, branches and all, to the ground. That planted in the garden has, like the rape, stood the severe frosts unimpaired. It is a delightful vegetable all the spring, and stands a winter or a cold climate. . . . This and rape are, I think, all the green food necessary to keep sheep through the winter, with the addition of a little hay. Rape may be sown broadcast in moist weather in May or June, and mown off for the sheep, when required, about six inches above ground. If the shoots are not required for pasture, let them go to seed, and the feed will pay better than any other crop, for making oil and rape cake."

¶ Here is a notable instance of the want of correspondence between isothermal and latitudinal lines between the west of Europe and the eastern portion of our own Continent. The two Spanish provinces the latitude of which is above given, have a climate more resembling the scorched *llanos* of Caracas than any portion, even the most southerly, of the United States.

the winter, however, they are covered with verdure. About the first of May the sheep start for the mountains.* Formerly many of them rested on the lofty *parameras* and mountain sides of Old and New Castile—the latter bleak, sterile and craggy, compared with the sides of our own Southern mountains. But a friend recently from Spain informs me that those once magnificent flocks (now, alas! thinned by confiscation,† the wholesale plunder of invaders,‡ and for the subsistence of adverse armies,||) do not at present stop in any considerable numbers on the Castilian mountains, but pass north to the Cantabrian, and that portion of the Iberian range north of Soria—or crossing the latter, spread over the Eastern Pyrenees, and the mountains of Saragossa north of the Ebro.

Anything like an elaborate comparison between the facilities for sheep husbandry furnished by the mountains of Spain and the Apalachians of the United States, south of the Potomac, would, perhaps, be out of place in this connection. But a glance at them may throw useful light on the question of comparative profit. If the Spaniard can grow wool at a profit, where the natural and physical features of the country gives him no advantage over us, we can certainly do so; for in every other respect we have the advantage.

The Eastern Pyrenees rise to a height of 10,000 feet,§ more than double that of the Peaks of Otter, or that of any other portion of the Apalachian range, with the exception of a few summits in North Carolina. Mount Perdu, one of the Pyrenees, is 11,283 feet in height,¶ or 4,807 feet higher than the Black, the highest mountain of the United States east of the Mississippi. Maladetta, Vignemale and others rise considerably above 10,000 feet.** Glaciers exist on different parts of the whole chain. "The acclivity of the Pyrenees on the side of Spain, is often extremely steep,†† presenting a succession of rugged chasms, abrupt precipices, and huge masses of naked rock."‡‡ Miñano, a Spanish writer of authority, in defending his countrymen from the charge of indolence, speaks particularly of the efforts of the hardy peasantry on the "almost inaccessible mountains of the Asturias, Galicia and Catalonia." The vegetation on these mountains is extremely variable, in some places being as luxuriant as the best on our Southern Apalachians, but more frequently dwarfish and meager. On large portions of them it is entirely wanting. The northern acclivities are frequently swept by cold and piercing gales from the Bay of Biscay. On the whole, it will be seen that they do not compare with our southern mountains in the advantages which they offer for sheep husbandry.||||

* For singular and interesting particulars in relation to their march, &c., and the municipal regulations pertaining thereto, see Livingston on Sheep, p. 36 *et supra*.

† Some of the choicest flocks in Spain were confiscated by the Government during the great anti-Gallie struggle. In the winter of 1809, the Spanish Junta confiscated the great flocks of the infamously celebrated Godoy and several other nobles, and they were bought by foreigners for exportation.

‡ The French Marshals, not finding anything in Spain to benefit the *fine arts of la belle France*, as in Italy, descended it, it is said, to benefit her *Agriculture*, by driving home some of the best flocks of Spain. The Allied Armies compelled the restitution of the *marble* and *caveas*, but those *priceless flocks* either could not be re-collected, or they were not regarded as of sufficient importance to be returned.

|| The Commissariat of the English, French and Spanish armies,

"The foe, the victim, and the fond ally."

found the great Spanish flocks a very convenient resort, and availed themselves of it fully. The Guerillas, contrabandists, and fugitive inhabitants, of course, did the same.

§ Malte Brun.

¶ Ib.

** Encyclopædia Americana; art. *Pyrenees*.

†† Montserrat (in Catalonia), so famous for its monastic establishments, will occur to you in this connection—where the steepness is so great that the monks ascend from hermitage to hermitage by ladders or stairs cut in the rocks!

‡‡ Encyclopædia Americana; art. *Pyrenees*.

|||| How much the associations of early life—early *reading*—dispose us to exaggerate even the physical extent of the region covered by these mountains, connected as they are with so many romantic and interesting remembrances! The whole chain, extending from Cape Finisterre to Port Vendres, does not exceed 250 miles in length; and the space covered by it is not, in Western parlance, a "circumstance" to that occupied by our Southern Apalachians! Yet, in the western *half* of this chain, Delayo and his successors maintained their Visi-Gothic kingdom, overthrew the descendants of the Abasides and Omniades, and finally wrested Spain from the Moorish yoke. Who remembers, without the map under his eye, that *Bau*

The route pursued by the Spanish flocks from, say, the middle of Estremadura to the Cantabrian mountains (the western portion of the Pyrenees), cannot fall short of 300 miles. It equals 270 miles in a direct line. In addition to the length of the journey, they are compelled to cross the Castilian mountains, and if they come from the south of Estremadura, also the mountains of Toledo. Their route to the eastern Pyrenees would be farther and still more difficult. Every circumstance, then, excepting *municipal* regulations,* gives our Southern States, on both sides of the Apalachians, a manifest advantage over Spain, for the purposes of migratory sheep husbandry.

Before closing the investigation of the question of the direct profits of wool-growing in the Southern States, it is proper to inquire if there are any special local militating causes or disadvantages not yet adverted to which should be taken into the account. Diligent investigation has satisfied me that there are no such causes—on the other hand, that there is a remarkable exemption from them—with one exception. That exception is the destruction caused by wolves and dogs.

Wolves are found in nearly all new, and particularly in mountainous countries; but they invariably rapidly give way before the extension of population.† They have even now ceased to be very destructive in the most sparsely settled regions of the South. Mr. Simpson, in the letter before quoted from, says:

“There are but few wolves in South Carolina, excepting on the mountains. Otherwise, our sheep which roam at large untended by shepherd, and uncared-for by any one, would soon be exterminated. The wolves are not numerous even on the mountains. They are not so destructive as dogs, which every now and then attack and destroy the sheep. A trusty shepherd, with a dog or two and a rifle, would prevent this.”

These remarks would apply equally well to nearly all the Southern States. Wolves do but little damage, and would soon cease to do any; but the miserable, prowling curs are, in many places, a serious detriment. There is something singular in the fact that while so much complaint is made of them in the Southern and Western States, in New-York, where there is certainly a great surplus of them, we hear little, comparatively speaking, of their depredations. I am inclined to attribute it to the fact that dogs are here constantly familiarized with the sight of sheep. The first even playful movement of the adventurous puppy toward them is severely chastised, and he is thus educated to recognize them as within the category of “protected” animals. The dog which slays or even pursues a sheep, finds a long *pedigree* or a *silver collar* utterly unavailing to save him from immediate death.‡

But even in the South or West, the loss occasioned by the depredations

nockburn was fought and Flodden lost to defend a *Kingdom* of half the dimensions of a good-sized American *State*! In comparing the agricultural capabilities—and especially in estimating the ultimate result of agricultural competition between our own country and the European ones, we rarely take sufficiently into view the great disparity in territorial dimensions.

* For the monopoly of privileges conferred on the flock-masters of Spain to the oppression and prostration of every other branch of husbandry, see Lasterie, and also Livingston on Sheep.

† A bounty of \$10 is paid for the destruction of every full-grown wolf, and \$5 for a wolf's whelp in the State of New-York.

‡ In New-York it is provided by law that every bitch over three months old shall be taxed \$2; every additional one owned by the same man \$5; two dogs over 6 months old \$1; every additional one \$3. The avails of these taxes constitute a fund, out of which Supervisors of Counties are to pay for any sheep slain by dogs whose owners are unknown. This is not often enforced.

Any person may kill any dog “which he shall see chasing, worrying, or wounding any sheep,” unless by direction of owner.

The owner or possessor of any dog on being notified “of any injury done by his dog to any sheep, or his dog having chased or worried any sheep,” must within 48 hours kill his dog, or forfeit \$2 50, and the farther sum of \$1 25 for every 48 hours thereafter, unless “it shall satisfactorily appear to the Court that it was not in the power of such owner or possessor to kill such dog.” Revised Statutes of New-York, vol. 1 chap. xx., title xvii.

of other animals, or the expense of guarding against them, would be light compared with that in some of the wool-growing regions of the Old World.

In Australia, the sheep are exposed to the attack of wolves, dogs, and *convicts*, and are constantly attended by a shepherd, and nightly folded, and guarded by a watchman with dogs and a fire.*

At the Cape of Good Hope, the shepherd and folding system is also followed. In addition to wolves, and wild dogs which hunt in packs, and from their superior sagacity are much more formidable than wolves,† the Cape sheep are preyed upon by a variety of animals, and when they pass the mountains to glean the herbage which springs on the banks of the streams on the vast and lonely Karroos, they are exposed to the attack of the lion, the panther, the leopard, and the whole Feline family, so abundant and so particularly formidable in Southern Africa.‡ And they have had, and probably yet have, an enemy more destructive than all of these, in the Bushmen, more wild, irreclaimable, and predatory than their congeners, the Bedouins of the Arabian desert.||

I have seen it proposed§ to teach young cattle to protect sheep from dogs, in the following manner: Turn a few steers into the pasture with the sheep, and with them a cow or two, having young calves at their sides. Send a dog into the field, and immediately the cows, followed by the steers, will commence a furious onset on the dog, and gore him or drive him from the field. After this is repeated a few times, it is said the steers will suffer no dog to enter the inclosure.

This might do very well under some circumstances, but I should prefer to *rely* on the remedy proposed by Mr. Simpson: the *dog* and the *rifle*. There are no "shepherd dogs" large and powerful enough to encounter and *kill* wolves and vagrant dogs, excepting the great sheep-dog of Spain; and he is so irreclaimably ferocious to all excepting his charge, that he might frequently bring his owner into difficulty, and even endanger human life. My impression is that a shepherd dog or two, to be on the alert, and a brace of mastiffs to capture and, if need be, slay wolf or cur, would be adequate protection for the sheep on a considerable range, and the expense of maintaining them would be trifling.

* Cunningham's "Two Years in New South Wales," vol. i. p. 251.

† Missionary Labors and Scenes in Southern Africa, by Rev. Robert Moffat, pp. 23-4.

‡ The following stanza from the spirited lines of Freiligrath—"The Lion's Ride"—will occur to you:

"And the vulture scenting a coming carouse,
Sails, hoarsely screaming, down the sky;
The bloody hyena, be sure, is nigh,
Fierce pillager he of the charnel-house!
The panther, too, who strangles the Cape-Town sheep

As they lie asleep,
Athirst for his share in the slaughter, follows;
While the gore of their victim spreads like a pool in the sandy hollows!"

|| To these may be added the savage Kaffirs, who, in their recent struggle with the Colonial Government, destroyed and drove off immense numbers of cattle and sheep. In 1834, "the natives," says Youatt, "drove off or destroyed 80,000 cattle and sheep almost innumerable."

§ By a writer in the American Agriculturist.

TURNIP CULTURE—ITS ADVANTAGES.

WHEN we see to what a great extent the vast improvements in British husbandry rest on the turnip crop, we become reconciled to the space given to the subject in THE FARMERS' LIBRARY, from Stephens's Book of the Farm, and cannot forbear the wish that we could persuade American farmers to enter more heartily upon trials of turnip culture, as a part of their husbandry, eminently conducive to the support of stock in the winter, and to the accumulation of barn-yard manure—the great dependence, after all, for permanent and econom-

ical improvement; depending, however, for its value, always on the *nature* of the food out of which it is produced.

We are well aware of the difficulties, especially in the South, owing to severe drouth, and to expense of labor, especially when cultivated with the hoe. Still we are persuaded that the trials have not generally been conducted with sufficient care and perseverance—else how is it that some farmers uniformly succeed with this crop? We have seen again the past season a prodigious crop of Swedes, on Mr. Corning's farm, near Albany, under the judicious management of Mr. Sotham; and a gentleman who visited Marshfield, last autumn, told us that Mr. Webster had every promise of his usual success in the turnip department, and would probably have a crop of 5 or 6,000 bushels. One great good to be obtained by the turnip culture, if it could be combined with sheep feeding, would be that by that means light lands, from which it is now banished, might be appropriated to wheat, as has been done so successfully in Norfolk, England, in portions of the county as sandy as our Sussex in Delaware, or Caroline, or even the locomotive district around Snow-Hill, in Maryland. So true is this, that a late writer says: "Hence, good farmers in all parts of the kingdom have come to the unanimous conclusion that *no soil is too light* to grow thriving crops of wheat, if only it be properly tilled."

Mr. Colman, too, speaking from personal observation, with his usual discrimination, says:

I believe our farmers would find a very great advantage in growing esculent vegetables for sheep and cattle, instead of keeping them, as is now done, through our long and severe winters, exclusively upon dry feed. They would be most useful for sheep in the lambing season, and for cows in milk; and though, in fattening properties, I know no article, all things considered, superior to our Indian corn, yet they certainly would come most beneficially in aid of that. I do not assert that turnips are the best crop for this purpose which can be grown, but Swedish turnips are certainly among the best. Mangel-wurzel, carrots, cabbages, parsnips, and potatoes, are all useful. I may recur to this subject again; but the conclusion to which I have myself come, and in which I am daily confirmed, and with which I wish the farmers of the United States could be more and more impressed, is, that an abundant supply of succulent food should be provided for their stock during our long winters—first, as conducive to the health of the stock; and next, as contributing essentially to the improvement of fattening stock, and as enabling the farmer to keep more stock; and lastly, as furnishing him with the best means of enriching his farm, and extending and improving all his other crops. These have been the

striking and universally-acknowledged results of such a system of husbandry here; and I have not a doubt that, in those parts of the United States from which the markets in our cities are to be supplied with beef and mutton, though, from the severity of our climate, it might with us be a more laborious process than here, and we could not have the advantage of feeding off our green crops on the lands where they grew, yet its great benefits would be an ample compensation for any extra expense or labor to which it might, in many situations, subject us. The difficulty and expense of procuring labor may present itself as an objection; but that will be continually diminishing. Improved machinery and new implements of husbandry are yearly affording increased facilities in cultivation; and, for our husbandry to be successful, it will require the liberal application of capital, added to enterprise, experiment, effort, and perseverance.

The following result of an experiment by Mr. J. Bloomfield, of Warham, Norfolk Co., to determine the best distance at which plants should stand, was given me by this excellent farmer, and will be curious to my readers. It was made upon Swede turnips. The row was twenty yards long.

| Rows. | Number of turnips in each row. | Distance apart in the row. | Average weight of each turnip in the row. | Weight of all in the row. | | Produce per acre topped and tailed. | |
|-------|--------------------------------|----------------------------|---|---------------------------|-------------|-------------------------------------|-------------|
| | | | <i>Inches.</i>
<i>Lbs.</i> | <i>Stones.</i> | <i>Lbs.</i> | <i>Tons.</i> | <i>Cwt.</i> |
| 1 | 32 | 24 | 5½ | 11 | 12 | 24 | 4 |
| 2 | 38 | 22 | 3½ | 10 | 2 | 20 | 1 |
| 3 | 39 | 20 | 3½ | 10 | | 19 | 13 |
| 4 | 40 | 18 | 3 | 8 | 10 | 17 | 15 |

Fractions are omitted.. The stone is 14 pounds.

INDIAN CORN.

CROP OF MR. STEVENS AT HOBOKEN FIFTY YEARS AGO—THE PHILOSOPHY THAT SHOULD GOVERN THE OFFER OF PREMIUMS.

MR. EDITOR: About fifty years have elapsed since a wager of fifty guineas was laid between Mr. JOHN STEVENS, of Hoboken, (father of the Stevenses still so noted for going ahead in what they *do* undertake, whether by wind, steam, or horse power,) and DANIEL LUDLOW, Esq., of Westchester, who would make the *heaviest crop of Indian corn* on three acres. To avoid all doubt as to *measurement*, a precaution was taken which I recommend to all Agricultural Societies, to be enforced against competitors. Mr. Stevens sent a man to measure Ludlow's land and Ludlow sent one to measure Stevens's. Stevens won, making on the three acres 354 bushels and 6 quarts, being *one hundred and eighteen bushels and two quarts to the acre!* Mr. Ludlow 98 bushels and 14 quarts.

I send you the process for publication, if you will promise that no more premiums will be offered for heavy crops, except on condition that the crop shall exceed these, made fifty years ago, and that it be done by the instrumentality of some new and economical and profitable implement or mode of culture, that shall be pronounced a *discovery in agricultural economy*, and worthy of being followed as a new and *profitable* application of labor and capital. For, after all, that's the philosophy of the case, and the only view or conditions on which such premiums should be now awarded, after \$10,000 have been bestowed for the same old things; and the same may be said of many others besides heavy crops on small patches, if you overhaul the *old standing lists*. T.

We have no power over the case. We don't know what lingering old tastes and customs may still demand; but we will so far add to the story of this Hoboken prize crop, as to say that Mr. Ludlow planted his corn in continuous rows, about 4 feet apart and eight inches in the row, and applied 200 horse-cart loads of *street dirt*—while Mr. Stevens (see how as the old cock crows, so crows the young!) determined to go ahead "anyhow," plowed in *seven hundred loads* of *street manure!* and planted in *double* rows 5½ feet asunder, and was at the pains of dibbling-in each grain over the three acres, "to do which with expedition and accuracy, he bored two rows of holes in a piece of board of about four feet long, so as to form equilateral triangles, the sides of which were seven inches, as thus:

Into these holes he drove pegs about 3½ inches long. As the corn was dropped into these holes, made with this machine, a man followed with a basket of rotten dung, with which he filled them up. Then came on the carts, out of which the rows were sprinkled with a coat of *street manure*. During the season the crop was suckered three times. The intervals were frequently plowed, and the rows kept perfectly clean of weeds, by hoeing and *hand-weeding*.

"But extraordinary as this crop may appear, Mr. Stevens is confident that he should have had considerably more corn, had not his crop suffered very greatly by a thunder-storm, which laid the greater part of it down at the time the ears were setting."

It would be curious to know what price for this crop would have realized a fair agricultural profit? Is not, our correspondent correct in the suggestion that the true desideratum is, whose corn has realized for the cultivator the *most profit*? It is very well to stimulate wealthy amateurs to trials, without regard to expense, to see what *can* be done; but they don't need or want any of the little money that is to be had for *agricultural* premiums. Societies should give their premiums for demonstrations that may be followed with profit by farmers in ordinary circumstances, and above all for something new in principle, or new in its way, in our country, so as to keep the public agricultural mind, if we may so

express ourselves, always on the *qui vive*. Thus only can *progressive* improvement be secured. Why offer bounties, again and again, for experiments which do not look to any results beyond what we already know can be accomplished, and have long since, and a thousand times, been recorded in our annals as matters of agricultural history, together with accounts of the processes and materials employed in their accomplishment?

MAJOR P. REYBOLD, OF DELAWARE,

WITH SOME OF HIS DOINGS.

MAJOR R. is assuredly one of the *tallest* farmers in the United States. We will not here anticipate the fuller memoir which may hereafter be given of his "rise and progress;" but speak only in very general terms, of *himself*, his *sons*, his *sheep*, and his *peaches*. Suffice it to say that he has *risen*, from the cradle, not to strangle a serpent, like Hercules, but to be "well on toward" seven feet high in his stockings, and well formed in proportion! In this, however, there is no merit, as all is due to Nature and good nursing; but it is to his especial honor that he has risen from standing a respectable victualer, in the Philadelphia market, to the higher honor of being one of the largest, wealthiest, and most successful landholders in the State of Delaware—which, if she be *little*, contains *multum in parvo*, were it only that she contained such men as Thompson, and Jones, and Reybold, and Canby, and Clarke and "sich like," all leading farmers, and holding offices of the highest and most honorable kind, *i. e.* in associations for the promotion of Education and Agriculture.

Major P. Reybold has, in some respects, done more to strengthen if not to extend the Union, than even the *President of the United States* himself. In truth, few men in the Union have equaled him in the performance of the three cardinal and particular duties of man. These are said to be: to *build a house*, to become a *father*, and to *plant a tree*. Now, Major R. has built a "palace of a house," from the top of which (with all the modern improvements) one may behold under his feet little Delaware spread out like a garden, surrounded by New-Jersey, Maryland, and Pennsylvania. Next, he has begotten and has around him not less than *eleven children*, all thriving and "well to do in the world," with their several score of grand-children to amuse their grand-parents in their ripe old age. As if confident of the vigor and prolificity of his stock, in which he takes great delight, the Major built in his house a room about 60 feet long, for the young things to play in.

Then, as to the duty of *planting a tree*, which is more than some do, besides many ornamental and other trees, he has planted enough for himself and his sons to send to market last year 80,000 (not 800, but) 80,000 *baskets of peaches*, each holding about 3 pecks!

But we only meant to hold up to view a few of his sheep: He bred, and one year fed and fattened, 21 sheep, that weighed *alive* 4,294 lbs.—averaging upward of 200 lbs. weight. *Net weight* of the 21, 2,421 lbs.—or an average of rising 115 lbs. being more than 28 pounds to the quarter! Where has it been beaten in all ovine annals? The Patent-Office Report, from which this statement is supposed to be taken, (and which, being the story told by the *scales*, admits of no doubt,) goes on to say that their wool was long, *fine* and *silky*—such as is raised

for the finest worsted stuffs. In *this*, we take it, there is some play of the imagination which demands some allowance for "variation."

But the Major and his sons, animated by that determination never to be satisfied while anything remains to be done, and which alone can insure progressive improvement, sent out his son *Clayton* (a good name) to England to inspect all the crack flocks of the kingdom. Of that enterprise we shall give an account hereafter, as we mean to pay the Major a visit in "peach time." Enough now to say, that he brought home an *Oxfordshire* ram, represented to be an improvement on the *Cotswold*, which the old gentleman—and he looks at such things with a practiced eye—thinks would now, if fatted, weigh 60 pounds to the quarter! We shall have more to say of this Grand Sultan, and of the Sultanas that are on their way for his harem from England.

SCRAPS:

AMUSING, INSTRUCTIVE, OR CURIOUS.

GUANO.—McHENRY BOYD, Esq., of Hartford County, Md., where *guano* has been most freely used, says he finds the best system decidedly is to *spread and plow it in*. He would sooner use *guano* at 250 or 300 pounds to the acre, than have stable manure for nothing, if to be hauled two miles. 500 lbs. of *guano* have brought his land from 2 barrels of corn up to 8 or 10 barrels—that is, 40 or 50 bushels.

AYRSHIRE CATTLE.—Mr. Boyd, of Maryland, has quite a considerable herd of cows with more or less of this blood—some thorough, some mixed—and esteems them for the *dairy* in proportion to their degree of Ayrshire blood. Mr. Colt holds his Alderney cows at \$150.

BUTTER.—To remove the milk with or without the use of water? That is the question. Premium specimens have been obtained, after both processes. The nicest *potted* table butter we have seen this winter was from Mrs.—(we like to give the *housewife* credit where we can)—was from Mrs. HAMMOND's dairy, near Elliott's Mills, Md. The milk was expressed altogether without the use of water.

PLANTING FRUIT TREES.—A writer in the *Cultivator* very aptly compares the practice of planting trees from a rich nursery into poorer land, to taking a horse from being well fed on oats and giving him *straw rations*. Twenty years' experience convinces him that fresh *hog* manure is best, particularly for *pears*, to be mixed well with the soil, as far as the roots extend. Every year or two a top-dressing should be plowed or spaded in.

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HOT-BEDS.—In the same paper it is stated that hot beds should be sunk in the ground to the depth of eighteen inches or two feet. They require a large supply of moisture, and if made wholly on the surface, they dry up so rapidly that they must be watered a great deal.

HOUSEKEEPING AND HOUSE MANAGEMENT.—About the most perfect for system, unexceptionable neatness and cleanliness, from garret to cellar, exactness marked by the greatest kindness in the treatment of the servants, the *ne plus ultra* in the cookery displayed upon the board, and invariable cheerfulness around it, is to be found at *Bellefield*, in Maryland, where, as on board ship, there is a place for everything and everything in place. True, some would jealously intimate that the *finger of the master* was to be seen here and there; but, for ourselves, we rather put our faith in the eye of the mistress; and, at all events, the lady who can get so much help from the gentleman must, it will be admitted, have *very winning ways with her*.

SMOKED MUTTON.—The Editor of the Tennessee Farmer, not having the fear of the swinish multitude before his eyes, declares his preference for the *ovine* over the *bovine* or the *swineish* race. He says, on his knowledge of physiology, which none will dispute, that a pound of lean, tender mutton can be procured for half the cost of the same quantity of fat pork; and that it is infinitely *healthier*, in summer especially; and that those who feed on it become more *muscular*, and can do more work on it, with more ease to themselves. He knows of nothing more delicious than *smoked mutton hams*. We can

readily believe it all; still we should prefer a ham of Commodore BALLARD'S curing at Belle-field, for *our eating*! especially if eaten, as canvas-backs only can be in real perfection, on the spot where they are killed.

SWELLING OF GRAIN BY BOILING.—The Edinburgh Journal of Agriculture gives, in the following table, the increase of bulk in different kinds of grain boiled for domestic animals to bursting:

4 measures of oats increased to 7 measures.

| | | | | | |
|---|----|-------------|----|----|----|
| 4 | .. | barley | .. | 10 | .. |
| 4 | .. | black wheat | .. | 14 | .. |
| 4 | .. | Indian corn | .. | 13 | .. |
| 4 | .. | wheat | .. | 10 | .. |
| 4 | .. | rye | .. | 15 | .. |
| 4 | .. | beans | .. | 8½ | .. |

A good farmer of our acquaintance said that from long experience he considered the value of corn for hogs increased by boiling in the ratio of 25 to 10. [Cultivator.]

AGRICULTURAL REPOSITORIES.—There is one in the *American Institute* for placing models. There ought to be a Society expressly for the *importation* of all newly-invented machines, if the Institute has not the means or facilities of doing it—not gimcracks, but machines whereof the real *usefulness* appears to be well proved, and within the means of American agriculturists.


PRUNING.—The Editor of the London Gardener's Magazine, among the most accomplished botanists of this or any other day, says:

"We know, indeed, of but one general fact which may be—we would rather say, should be—invariably attended to, and that is the universal necessity of *keeping branches thin*. Light in abundance, and the freest circulation of air among leaves, are of vital importance to all plants; but these cannot be secured unless the branches are left thin. A crowd of branches implies a crowd of leaves, and in a crowd leaves can neither breathe, nor perspire, nor feed; in fact, they are smothered. But, when they stand well apart, they breathe freely, perspire profusely, and feed incessantly: the result of which consists in fine, strong, stiff shoots, and dark green, fat leaves, instead of spindling twigs and yellow weakened foliage."

THE OHIO BUSHEL.—An act of the Ohio Legislature, passed the 8th February, 1847, fixes the following weights as the standard bushel of articles named, when sales are made by the bushel, without special agreement between the parties as to the measurement—that is to say:

| | |
|-----------------------|-----------------------|
| Wheat.....60 lbs | Rye.....56 lbs. |
| Indian Corn.....56 .. | Flax-seed.....56 .. |
| Barley.....48 .. | Clover-seed.....64 .. |
| Oats.....32 .. | |

All right—everything susceptible of it should be sold by *weight*. Chickens ready for the spit are sold by the weight in New-York, as we have seen at the watering places; and they are getting in the way of it in the City. Who will

give us the usual weight of a bushel of *potatoes* and other vegetables?  We don't mean rotten pot80000000's.

BINS.—The following table will show the capacity of bins; also the capability of greatly increasing them by enlarging the area of each:—
A bin 6 feet square and 21 feet deep will contain 28 cubic yards of manure; do. 6 ft. 8 in. do. 21 do. 35 do.; do. 7 ft. 4 in. do. 21 do. 42 do.; do. 7 ft. 11 in. do. 21 do. 49 do.; do. 8 ft. 6 in. do. 21 do. 56 do.

TOP-DRESSING.—The great care now taken to preserve liquid manure, which was formerly allowed to run to waste, and the accounts of its fertilizing effects upon land, published almost weekly in the *Agricultural Gazette*, are proofs of the high value set on this form of manure; almost, indeed, a higher value than on the solid manure of the farm-yard. Agriculturists see the rapid effects of liquid manure on growing crops, without reflecting that the advantages of manure applied in a fluid state result not from any peculiar richness which it possesses, but from its being presented to the plant in a state of solution or minute subdivision, and therefore ready prepared for the food of vegetation.

STRAW MANURE.—Farmers must learn to distinguish more than they have done between the *qualities* of manure, and think less comparatively of quantity. Manure from cattle barely kept alive on straw is not worth hauling half a mile. Oil-cake is much used in England as food for cattle, but would not be were it not for the returns it makes in the *quality* of the manure.

LET this be held the farmer's creed:
For stock seek out the choicest breed;
In peace and plenty let them feed.
Your land sow with the best of seed;
Let it not dung nor dressing need;
Inclose, plow, reap, with care and speed,
And you will soon be rich indeed.

MUCH WANTED.—A list of *French* weights, measures and moneys, in ordinary use by French writers on agricultural and political economy and statistics.

If any one will have the kindness to supply it, we will ask the additional favor of his accepting a handsomely-bound copy of Guénon's *famous cow-book*.

THE MARVEL OF THE DAY is Guénon's book on *cowology*. At a meeting in the Legislative Hall at Boston, several of the most respectable farmers in Massachusetts pronounced the *signs* laid down in that book for telling the milking properties of Cows, published in *THE FARMERS' LIBRARY*, to be infallible, after trial in *many hundred cases*! One gentleman said that a cow-keeper had better give \$100 for it than be without it.

THE SOCIETY FOR THE ENCOURAGEMENT OF NATIONAL INDUSTRY IN FRANCE offers, up to 1850, large premiums annually for the introduction of new plants, &c. from foreign countries, which may be useful in rural economy or the arts; and, after designating particular objects, they make a general offer of *twelve thousand francs* for the discovery which shall be adjudged the most useful in perfecting French industry in departments or branches in which France has not yet attained superiority over foreign countries.

VON THAER.—The Journal of Agriculture, published in Paris, places the name of this great agricultural writer (whose profound work on the Principles of Agriculture was published entire in the first volume of THE FARMERS' LIBRARY) at the head of the list of German writers; to whom it acknowledges France to owe great obligations for their contributions to agricultural literature. Yes—that's the word—" *littérature agricole*."

OFFERS OF PREMIUMS.—The Central Society of Veterinary Medicine at Paris [we ought to have one in New-York] has offered premiums of 1,000 francs for the best Essay on the *peripneumonia*, or disease of the lungs in *cattle*; 500 for the best Essay on the periodical salivation or *slabbering* of *horses*; and 300 for the best on the *trembles* or convulsions in *sheep*. Now all these, and other Essays for which very large sums are paid in England and in France, are at our command for the benefit of the friends of THE FARMERS' LIBRARY, very soon after they have been published in Europe. We need hardly say that we shall endeavor to make the most of 'em.

GRAFTING WAX.—I was surprised to see, in the January number of THE FARMERS' LIBRARY, that *clay* was used in grafting, instead of the *wax* the Yankees use. Ah! they are at least a hundred years before us. An equal quantity of beeswax, rosin and tallow, melted together and put on a strip of cotton, say an inch and a half wide, wrapped once around the graft, can be much easier and quicker done, and with greater success. When done in cold weather the wax can be made hot, and the strings dipped in.

MUNIFICENCE WELL BESTOWED.—We rejoice to see it stated that the British Government has granted a life pension of £100 to the widow of the late Mr. LONDON, whose portrait and memoir have been published in THE FARMERS' LIBRARY, in consideration of the utility of his labors to promote and refine the arts of useful cultivation. How can a nation's funds be bestowed with more propriety than on the helpless widows of those who have preëminently aided to increase its means of subsistence, and to promote civilization. Alas! that it should be only in the patronage lavished by monarchs and despots on the military props of their power, that our Republican Government imitates them, with a fidelity as ill-judged as it is dangerous in its tendency to public liberty. As to London's labors, *his wife* was a strong spoke in the wheel.

What rewards do we give to those who save us from war? The Emperor of China, being once asked how much he paid his physician, answered—"Liberally while I keep well, but nothing when he lets me get sick."

"All honor should pay to the conquering SPADE!
That sword and spear are but barren things;
While to king in his pride, and his subjects beside,
Its bounties the spade of the gardener brings!"

VANACK CABBAGE

Is a variety with which we are not acquainted. It is, as will be seen, very highly commended in the following notice in a London paper, which we should esteem worthy of a place were it only for the suggestion, which we hope will not be lost on American Agricultural and Horticultural Societies, to wit—the importance of offering premiums not so much for the fattest, and the largest, and heaviest things, but for the *most genuine* of such varieties as are known to be valuable and worthy of preservation. What is wanting is to preserve that which is known to be excellent in quality, in its natural size and genuine characters; not to stimulate the growth of monsters in size or form, merely to amuse the childish and to attract the notice of the ignorant.

Would it not, let us repeat, be highly useful if a Society could be formed especially to import, without loss of time, new varieties of fruits and vegetables, and machinery more efficient and labor-saving than the best we have in use?

VANACK CABBAGE.—Of all the numerous sorts that have been offered to the public, this (959)

cabbage has no rival. By a little care, it may come to the table young almost the whole year round. It is many years since I obtained some seeds from the Garden of the Horticultural Society, and I have never tasted any sort to be compared with it. It is now difficult to obtain it pure. It is easily known by its tendency to burst when it attains a considerable size. The long lists in nurserymen's catalogues might well be curtailed, and the Vanack placed at the head. Whatever single sort one may purchase by name is sure to turn out mixed, so careless have seedsmen become. I got some seeds under the name Vanack in Edinburgh, and, while almost every plant differed from another, there is not a true Vanack among them. It is a pity that the London Society does not give prizes for specimens of pure varieties of culinary vegetables, that the best may be kept up. It is right to place the *dulce* in the first rank, but the *utile* should not be forgotten.

THE PIG TRADE.—The last Report from the Patent Office gives us the value of the cotton crop, say 2,400,000 bales, at \$23 per bale, \$57,200,000. The pork crop in 1839 was upward of 26,000,000. Now it is estimated this weighed on the average 180 lbs. each, and that pork was worth \$3 50 per cwt., or \$160,000,000; and as but few hogs are kept over twelve months, we may safely calculate the pork crop as worth three times the cotton crop. We have often heard of the three crop system in Maryland, to wit: Negro makes corn; corn makes pork; pork makes Negro. Truly pork is of great value.

PRICES CURRENT.

[Corrected, March 24, for the Monthly Journal of Agriculture.]

| | | | | | | | | |
|-------------------------------------|------------|-------|-------|------|---------------------------------------|---------------|------|-------|
| ASHES—Pots, 1st sort..... | \$ 100 lb. | 4 87½ | @ | — | Staves, White Oak, pipe, \$ M.... | 50 | @ | — |
| Pearls, 1st sort, '46..... | 6 25½ | @ | — | — | Staves, White Oak, lhd..... | 40 | @ | — |
| BEE-SWAX—American Yellow.... | 27 | @ | — | — | Staves, White Oak, bbl..... | 30 | @ | — |
| CANDLES—Mould, Tallow.. | \$ lb... | 9 | @ | 11 | Staves, Red Oak, lhd..... | 24 | @ | 28 |
| Sperm, Eastern and City..... | 30 | @ | — | 38 | Hoops..... | 20 | @ | 30 |
| COTTON—From..... | \$ lb. | 10½ | @ | 14 | Scantling, Pine, Eastern..... | — | @ | — |
| COTTON BAGGING—American.... | 12½ | @ | — | 13 | Scantling, Oak..... | — | @ | — |
| CORDAGE—American..... | \$ lb. | 11 | @ | 12 | Timber, Oak..... | \$ cubic foot | 20 | @ |
| DOMESTIC GOODS—Shirtings, \$ y. | 5 | @ | — | 11 | Timber, White Pine..... | — | @ | 20 |
| Sheetings..... | 7 | @ | — | 15 | Timber, Georgia Yellow Pine.... | 24 | @ | 28 |
| FEATHERS—American, live..... | 28 | @ | — | 32 | Shingles..... | \$ bunch | 1 75 | @ |
| FLAX—American..... | 7 | @ | — | 8 | Shingles, Cedar, 3 feet, 1st quality. | 26 | @ | — |
| FLOUR & MEAL—Genesee, \$ bbl. | 7 06½ | @ | 7 12½ | — | Shingles, Cedar, 3 feet, 2d quality. | 22 | @ | 24 |
| Troy..... | 7 06½ | @ | 7 12½ | — | Shingles, Cedar, 2 feet, 1st quality. | 17 | @ | 18 |
| Michigan..... | 7 06½ | @ | 7 12½ | — | Shingles, Cedar, 2 feet, 2d quality. | 15 | @ | 16 |
| Ohio, Flat Hoop..... | 7 06½ | @ | 7 12½ | — | Shingles, Cypress, 2 feet..... | 13 | @ | 14 |
| Ohio, Round Hoop..... | — | @ | — | — | Shingles, Company..... | 28 | @ | 30 |
| Ohio, via New-Orleans..... | — | @ | — | — | MUSTARD—American..... | 16 | @ | 31 |
| Pennsylvania..... | 6 50 | @ | — | — | NAILS—Wrought, 6d to 20d.. | \$ lb. | 10 | @ |
| Brandywine..... | 6 75 | @ | — | — | Cut 4d to 40d..... | — | @ | 44 |
| Georgetown..... | 6 75 | @ | — | — | PLASTER PARIS—\$ ton..... | — | @ | — |
| Baltimore City Mills..... | 6 50 | @ | — | — | PROVISIONS—Beef, Mess, \$ bbl. | 11 50 | @ | 12 |
| Richmond City Mills..... | 8 | @ | — | 8 50 | Beef, Prime..... | 8 62½ | @ | 9 25 |
| Alexandria, Petersburg, &c..... | 6 75 | @ | — | — | Pork, Mess, Ohio..... | 14 25 | @ | — |
| Rye Flour..... | 4 75 | @ | 4 87½ | — | Pork, Prime, Ohio..... | 12 25 | @ | — |
| Corn Meal, Jersey and Brand.... | 4 87½ | @ | 5 | — | Lard, Ohio..... | \$ lb. | 9½ | @ |
| Corn Meal, Brandywine..... | hhd. | 22 50 | @ | — | Hams, Pickled..... | — | @ | 10½ |
| GRAIN—Wheat, White..... | \$ bush. | 1 65 | @ | 1 75 | Shoulders, Pickled..... | — | @ | 6½ |
| Wheat, Western, Red..... | — | @ | — | — | Sides, Pickled..... | — | @ | — |
| Rye, Northern..... | — | @ | — | 90 | Beef, Smoked..... | \$ lb. | 9 | @ |
| Corn, Jersey and North... (meas.) | — | @ | — | 95 | Butter, Orange County..... | 20 | @ | 22 |
| Corn, Southern..... (measure) | — | @ | — | 93 | Butter, Western Dairy..... | 14 | @ | 16 |
| Corn, Southern..... (weight) | — | @ | — | 93 | Butter, Grease..... | — | @ | — |
| Oats, Northern..... | — | @ | — | — | Cheese, in casks and boxes..... | 7 | @ | 7½ |
| Oats, Jersey..... | — | @ | — | 43 | SEEDS—Clover..... | \$ lb. | 7½ | @ |
| HAY—North River in bales, \$ 100 b. | 53 | @ | — | 56½ | Timothy..... | \$ tierce | 17 | @ |
| HEMP—American, dew-rotted... ton | 115 | @ | — | 130 | Flax, Rough..... | — | @ | 11 50 |
| " " water-rotted..... | 150 | @ | — | 200 | SOAP—N. York, Brown..... | \$ lb. | 3½ | @ |
| HOPS—1st sort 1846..... | — | @ | — | 10 | TALLOW—American Rendered... | 8½ | @ | 9 |
| IRON—American Pig, No. 1..... | 22 50 | @ | — | 25 | TOBACCO—Virginia..... | \$ lb. | 2 | @ |
| " " Common..... | — | @ | — | 93 | North Carolina..... | — | @ | — |
| LIME—Thomaston..... | \$ bbl. | — | @ | — | Kentucky and Missouri..... | 3 | @ | 6½ |
| LUMBER—Boards, N.R., \$ M. ft. cr. | 30 | @ | — | 35 | WOOL—Am, Saxony, Fleeced, \$ lb. | 35 | @ | 37½ |
| Boards, Eastern Pine..... | — | @ | — | — | American Full Blood Merino.... | 32 | @ | 34 |
| Boards, Albany Pine..... | \$ pec. | 10 | @ | 18 | American ½ and ¾ Merino..... | 25 | @ | 27 |
| Timber, Georgia Pine..... | \$ M. ft. | 24 | @ | 28 | American Native and ¾ Merino... | 23 | @ | 25 |
| | | | | | Superfine, Pulled..... | 30 | @ | 32 |

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THE AGRICULTURE OF OHIO,

AND THE PRESS AS CONNECTED WITH IT.—THE OHIO CULTIVATOR.

THE effect which may be produced by a single press, controlled by an active-minded, zealous man, and directed to the welfare of a particular branch of industry, has been clearly evinced by the results which have ensued the establishment of the "OHIO CULTIVATOR," by Mr. BATEMAN, at the Seat of Government of the "Buckeye" State.

A Board of Agriculture has been organized under legislative sanction; Societies have been formed all over the State; and by these has an impetus been given to the *mind* of cultivators of the soil in that powerful and flourishing Commonwealth, (an empire in herself,) which promises for her sons more true glory and more enviable distinction than are to be derived from the most fertile soil and the most abundant natural advantages. Sincerely do we wish her success in the career of intellectual investigation as connected with her greatest and most substantial industry. At what higher or nobler destiny can any people aim? What object, in comparison with it, is worthy to engage the attention of rulers or citizens?

With every disposition to befriend, and no motive to flatter the Editor of the Cultivator, we do not say that the forward movement in the line of agricultural improvement in Ohio is altogether the fruit of his zeal and ability. The materials were on the spot; the kindling may have been prepared, and even the sparks may have been scattered here and there; but it is obvious that since Mr. Bateman planted himself in their midst, and put his hands to the bellows, the blaze has been spreading far and wide, until the whole Commonwealth is getting illuminated. But all this could not have been accomplished without a cheerful spirit, and many willing hands on the spot to assist.

Older papers, too, such as the Albany Cultivator and the Genesee Farmer, of extensive and deserved influence, had doubtless opened the way, and so prepared the public mind that the *virus*, so skillfully applied by Doctor B., took at once. Would that all communities were equally liable to similar inoculation. But if a single press, in the midst of a great State, in the beginning like a still small voice in the wilderness, can accomplish so much, what might not be expected for the cause of *agricultural education* (which, after all, must underlie all great and general improvement), were it possible to enlist even the occasional aid of the general press of the country in behalf of that greatest of all national concerns?

The agricultural mind of the United States, if we may so express ourselves, is getting into a state of general agitation and anxiety on the subject of education, as connected more expressly with the tillage of the earth. In some of the States great progress has already been made in that direction, so that agricultural inquiry may be considered in a transition state, as it were, proceeding from the observation of certified results to the investigation of causes—from the collection of facts to the act of generalizing them—and thus, by establishing principles on the basis of practical observation, rendering more certain and infallible those results which have heretofore been the effect rather of chance than of science, thereby robbing the pursuit of the agriculturist of the only characteristic that can give dignity to success in any employment.

The next movement (and God grant it a speedy consummation !) will be a demand, on the part of the landed interest of the country, for the establishment of Normal Institutions at the public expense, adapted expressly to the preparation of teachers, who shall take charge of all our country schools, well qualified to give instruction in all the principles involved in practical Agriculture and in the literature that naturally belongs to, and that may serve to enliven and adorn the position and pursuits of the American farmer.

More than from ten thousand party effusions, was the gratification felt at finding the following passages in two leading Baltimore journals of recent date :

PROFITS OF FARMING.—At an agricultural meeting in Massachusetts recently, some remarks were made by Mr. CALHOUN, of Springfield, on the profits of farming as compared with other pursuits. The conclusion arrived at was that farmers, on the average, succeed better than merchants; that if, by way of experiment, one hundred men should go into a city and trade, and one hundred go to farming, at the end of twenty years the one hundred farmers would be worth the most money. Mr. Calhoun referred to some facts, statistical and other, to show the risks of mercantile business, and added, with regard to Agriculture :

"Here is a foundation that may be built on with more certainty than any other. Yet young men are rushing into cities to make their fortunes. It is all-important that the facts which have here been stated, now and at former meetings, should be deeply impressed on young minds. Mr. Brooks says 15 per cent. may be made on capital by any diligent and systematic farmer. Hon. John Lowell said 18 per cent.—All this may be done by farming intelligently. He had wondered that farmers generally could get along so well as they actually do in their careless mode of farming. For himself, he had regained his own health by farming. The fresh open air had restored him. He repeated his

pleasure on hearing the numerous statements of the profits that may be made in this business. One more consideration should have much weight. It had been truly stated by his venerable friend from Framingham (Mr. Wheeler) that this business naturally leads the mind to contemplation, and to gratitude to the Ruler of the Universe, to whom farmers feel obliged to look for a blessing on their labors. No occupation so directly leads the mind to reflection on the works of creation. All that we eat, drink and wear, comes from the ground. In every view this occupation is important."

If the profits of farming in New-England can be made to rise to eighteen per cent., the advantages of our soil and climate ought to enable the farmers of Maryland to realize a still higher rate. *The importance of bringing Science to the aid of Agriculture is becoming more generally appreciated now than formerly, and we may hope that the results already realized may have the effect of perfecting an alliance so pregnant with beneficial consequences. It would be easy to make the elements of agricultural chemistry a part of the course of instruction in schools and academies—so far, at least, as to teach how to analyze soils and learn their different natures.* [Baltimore American.

To the above we add, with much pleasure, the following sound doctrine on the subject of *Teachers—their pay and qualifications*. By-the-by, what better test could one desire of the character of a nation, and of the progress it is making in useful knowledge and civilization, than the grade and qualification of the persons employed to mould the mind and character of the rising generation?—How infinitely more important for all truly glorious and Christian purposes, than are the qualifications of those whose sole business is that of being in the best possible manner prepared for shedding human blood! And, when comparatively as well skilled for teaching, how well entitled are they to at least equal pay and respect!

SALARIES OF TEACHERS.—We have received a pamphlet containing a discourse delivered before the Board of Public School Commissioners, by Rev. J. N. McJilton, against the reduction of the salaries of Teachers in the Public Schools. It is an admirable discourse. The point contended for is very clearly sustained. There can be no doubt that the teacher who devotes his time, talents and energies to the instruction of youth, should be liberally paid. None but those well qualified can discharge the highly important office of a teacher; and, to secure the services of such, an adequate compensation must be given. Teaching has heretofore been looked

upon too much as a mere alternative or stepping-stone to something else, and hence many undertake it totally unqualified. It should be made one of the regular professions, and no one be allowed to teach without having pursued a regular course of study to that end. This would secure talent, education, and all other necessary qualifications. The profession of teaching would be looked to as permanent, and none but those who could command good salaries would be in requisition. Incompetent persons, who have been in the habit of teaching, would be under the necessity of seeking other pursuits more appropriate to their capacities. [Baltimore Patriot.

Oh! that Editors in other States, were it only occasionally, in their country papers, would exhort the farmers of the United States to reflect on the prodigious average elevation and improvement of their pursuit, in all respects, which could not fail to result from taking measures to have their sons *more expressly and thoroughly instructed in the art and principles of the great calling by which they are to live, and by which all classes are supported!* See the advantages enjoyed, as it respects the press and its all-powerful influence, by all other classes, in comparison with what it does for the defence and enlightenment of the landed interest! Look, in this particular, at the State of Ohio, for one, and, *ex uno disce omnes*. Contrast her agricultural population and productions with those of all other employments united, and then look at the number and cost of the mercantile and party political papers, as compared with those (might we not say, with *the one*?) whose province it is to watch over, to warn, to enlighten and advance the agricultural community! The force of the question we raise, and to which we invite the attention of the cultivators of the soil in Ohio, and in other States, to which it is equally applicable, may be better appreciated on a view of the facts which rise up before us as we proceed—as, for example: Look at the estimated value of the annual products of agricultural industry in Ohio eight years ago, as compared with that of other sources of her wealth and strength—assuming, as Prof. Tucker has done, one-fourth of their gross value as the annual value of the domestic animals (horses, mules, neat-cattle, sheep, hogs,) and the account stands thus:

| | | | |
|--|------------|--------------|--------------|
| Live-stock..... | | | \$8,447,526 |
| Wheat.....bush. | 16,571,661 | \$8,285,830 | |
| Oats..... | 14,393,103 | 2,158,965 | |
| Maize..... | 33,668,144 | 6,733,629 | |
| Other grain..... | 1,659,884 | 669,179 | |
| Potatoes..... | 5,805,021 | 870,753 | |
| | | | 18,718,356 |
| Wool.....lbs. | 3,685,315 | \$921,329 | |
| Tobacco..... | 5,942,275 | 297,113 | |
| Sugar..... | 6,363,386 | 381,303 | |
| Products of dairy..... | | 1,848,869 | |
| .. orchards..... | | 476,271 | |
| Hemp and Flax.....tons | 9,0804 | 726,420 | |
| Hay..... | 1,022,037 | 4,088,148 | |
| Other products..... | | 1,896,666 | |
| | | | 10,636,119 |
| Total annual value of the products of agricultural industry..... | | | \$37,802,001 |
| Of Manufactures..... | | \$14,588,091 | |
| Commerce..... | | 8,050,316 | |
| Mines..... | | 2,442,682 | |
| The Forest..... | | 1,013,063 | |
| Fisheries..... | | 10,525 | |
| | | | 26,104,677 |

Thus it appears that the annual product of every source and of every class in the whole State united is less than that of the plow and the fields by \$11,697,324. Then, again, look at the distribution of the classes as employed in the various industrial occupations, as here represented according to the last census:

| | |
|---------------------------|---------|
| In Agriculture..... | 272,579 |
| Mining..... | 704 |
| Commerce..... | 9,201 |
| Manufactures..... | 66,265 |
| Navigating the ocean..... | 212 |
| Internal navigation..... | 3,323 |
| Learned professions..... | 5,663 |

85,368

Agriculture over all others.....187,211

or more than three persons employed in cultivation to one of *all other classes combined*.

Now then look at the means at work for advancing the knowledge and the welfare of the manufacturer, the merchant, and the *political partisan*, a class of men who are ever riding but never willing to be ridden by the people. For the use of these artificial classes which grow out of and derive their employment from the products of Agriculture, there are in the State of Ohio

| | | | |
|-------------------|----|------------------|-----|
| Daily papers..... | 16 | Semi-weekly..... | 1 |
| Weeklies..... | 81 | Monthlies..... | 2 |
| Tri-weeklies..... | 5 | Making..... | 105 |

papers collecting and diffusing such knowledge and such doctrines through all parts of the State as may be deemed most useful and acceptable, without any pretence of particular devotion to the cultivators of the soil. Besides these, if not against them, there is the OHIO CULTIVATOR, (a host, truly, in itself,) published at *one dollar a year*, standing, we believe, of its class, solitary and alone, and battling the watch single-handed for the whole agricultural community—while they, instead of making a point of duty and of honor, no less than of interest, to stand by it to a man, hesitate to contribute even one dollar a year to support that one journal exclusively dedicated to the very business of their lives, one which is to be the mindless drudgery, or, as it may be, the intellectual (and only as it is intellectual the worthy) occupation of their sons!

Is it possible to augur well of the destinies of a community, thus too mercenary to provide the suitable aliment for strengthening and expanding the minds of their children as relates to their profession, or too ignorant to perceive that in farming as in all else, light is knowledge, and knowledge is power? And yet we do augur most auspiciously for the coming community of Ohio farmers, because we see in the very Report before us of the "OHIO STATE BOARD OF AGRICULTURE," which we laid down to take our pen for the expression of the reflections to which a view of it gave rise—we see in this Report itself the most gratifying evidence of the existence and diffusion of that zeal and knowledge which promise not only to arrest the State in that downward progress to exhaustion which has marked the career of other and older States, but which will bear her upward and onward to a point of much higher productiveness than she has ever yet attained.

In fact, the able Introduction to this first ANNUAL REPORT OF THE OHIO STATE BOARD OF AGRICULTURE, by the distinguished President, ALLEN TRIMBLE, may itself be hailed as an evidence that Agriculture is in a fair way to take, in that State, the precedence to which it is everywhere entitled in the rank of industrial pursuits. It clearly indicates that the time is approaching when there will prevail throughout the State an abiding conviction that *their system of edu-*

cation should be mainly, if not entirely, based on the great truth that with the cultivation of the land must be connected the cultivation of the mind. Agriculture will reach and maintain its attainable excellence and its rightful supremacy only when the sentiment shall become general which was lately avowed with equal modesty and good sense at one of the meetings held in the Legislative Hall at Boston, where, according to that excellent paper, the MASSACHUSETTS PLOWBOY :

Major WHEELER spoke at some length on the propriety of bringing up more young men to *learn the art of farming.* The rich would find their account in giving their sons a chance to acquire agricultural information. He repeated that he had long been engaged in other kinds of business; he had been in trade, and though he had never an opportunity of going to school much, he had not felt the want of education so sensibly *in any branch of business as in farming. Here he found he needed the aid of science.*

In the same commendable and auspicious spirit Mr. JENKS, of Boston, remarks :

The importance of proper education cannot be too highly estimated. The difference between those mechanics who come here from Europe with a proper education and others is great. Those among them who are called *teachers* earn and receive forty per cent. more than other hands. Mr. Jenks thought the great improvement which has been made in plows was the result of scientific investigation. He had heard of a man who made a profit by farming with the aid of books alone, without any practical education. He was guided by science only.

We regret that we have not space at command to publish the whole of this introduction from Mr. TRIMBLE—but have we not occasion to experience that feeling every day, with so many very able addresses delivered to Agricultural Societies, which, could we follow our inclinations, would go far to fill every number of this Journal ?

It appears by this Report that Societies had been formed, in the single year previous, in more than twenty counties. Of the nature and value of the information collected as respects the capability and products of the State, the reader may judge by supposing what replies would be elicited by the following "CIRCULAR." It is only, as every one knows, the disinterested and public-spirited who will take the trouble to answer such Circulars; therefore the information they impart is generally the most reliable to be had. The most wealthy are frequently content to guard their money-bags, and while they avail themselves of other people's communications, are either too lazy or too selfish to impart any. We the more incline to make room for the Circular, as we hope it will be adopted, with modifications to suit circumstances, and be addressed by other Societies to prominent men in all parts of the country :

CIRCULAR OF THE BOARD.—The following interrogatories will show particularly what information is desired by the Board :

1. What is the prevailing character of the soil of the country—is it mostly rolling, or level—sandy, or clayey—and what kinds of timber predominate in the forests ?

2. What are the principal kinds of farm crops or agricultural productions ?

3. What was the character of these crops the past season as to yield and quality, and what is supposed to have been the yield of each, per acre, with ordinary cultivation ?

4. Have you any reliable information or statistics of the aggregate amount of any staple products sold or produced in the county ? if so, give the same, and the name of the source whence obtained.

5. In what towns or cities are the surplus productions of the county mostly marketed,

and what have been the prevailing prices paid to farmers for the same the present season ?

6. Have any considerable improvements, within your knowledge, been introduced in your county during the past two or three years, in the modes of farming or the kinds of farm crops, implements or stock ?

7. Is there any Agricultural Society, or Farmers' Club, at present organized in the county ? if so, give the names and Post-Office address of the principal officers, and add any other particulars respecting its history or transactions that may be deemed interesting. (Such Societies as have drawn money from the County Treasuries, in accordance with the law passed last winter, are required to make a report in accordance with the instructions of the Board, published in the Ohio Cultivator of April 1, 1846.)

It will be proper for you to add any other facts or suggestions relating to the Agriculture of the county, or the means of its advancement, that may occur to your mind. It is desirable,

however, that these reports from the different counties should be as brief as perspicuity will allow. The Board are already in possession of statistics showing the number and average value of the different kinds of farm stock in the several counties—the value of the lands, &c., as given in the returns of the Auditors.

After all, the average product of this comparatively new and fertile region will be found to fall below that of England, where science in the knowledge and use of manures particularly, and in the principles of rotation and tillage, have brought up the average product from 17 bushels, in 1821, to 26 bushels to the acre. But what may not be expected of the improved Agriculture of a country where a close observer tells us that on stepping unexpectedly into a country school on the road-side in Scotland, he caught “a class of poor bare-footed boys going honorably through a close examination in Agricultural Chemistry.”

Who can conceive what would be the blessings for Ohio, and for other States, if now she would only take enough of the public money levied on the farmers, directly or indirectly, and establish at Columbus or elsewhere an institution, with a few *able* Professors, exclusively for the instruction of *teachers* (for that is what we want,) who would ultimately take the place of incompetent instructors, and educate all the boys of the State as thoroughly in the science and practice of Agriculture as the Cadets at West Point are now educated in the science and practice of gunnery?

It was with a view to address queries similar to these (with others that we will hereafter suggest) that we made the request some time since, that some officer in every Agricultural Society in the country would only have the goodness to take five minutes' time and the smallest modicum of trouble to give *the name and locality of his Association*; but not more than half a dozen answered the call. Had a like call been made on the heads of manufacturing establishments, or Chambers of Commerce, or any other associated interests, they would have come together like gallant soldiers at the sound of the bugle. Not one in one hundred would have failed to respond. Such is the difference in sensitiveness to all that particularly concerns them between the artificial classes and the great substantial body of the people—the farmers—on and by whom every other class lives.

To the question in the Circular as to the introduction and use of improved implements in the several counties, we observe that Mr. Keene, of Champaign county, says as to reaping and threshing and drill machines:

6. *Hussey's* reaping-machine, worked by horse-power, was introduced in this county during the past harvest, and some two or three hundred acres of wheat cut with it. It cuts the grain without waste, and leaves a short, even stubble. It employs nine men and four horses to work it, and cuts, upon an average, 12 to 15 acres per day. The man who sits on the machine, to pass the grain off the platform, works very hard and to great disadvantage, from the position in which he is obliged to sit. Machines are now being made in Urbana, our county town, to order, by a machinist who promises to make them so that they will pass off the grain to the bind-

ers for any sized sheaf that may be desired, thus superseding the necessity of a man on the machine for that purpose. Improved threshing-machines, whereby the grain is threshed and cleaned by one operation, at the same cost per bushel as was formerly paid for threshing alone—are now in pretty general use in this county. The wheat-drill was used by several of our farmers last fall, for the first time. The great advantage of this mode of seeding is said to be in the yield, of which I cannot speak. We have no Agricultural Society in operation in our county, nor any regular Farmers' Clubs.

For ourselves, we know of no one who has taken more interest in improved machinery, for these purposes, or who is better prepared to illustrate their advantages, than JOHN JONES, Esq., of *Wheatland*, Delaware. There only have we

seen even the stubble of a crop of drilled wheat. The following serves to exhibit the results of the queries as to the average product of some of the chief staples of Ohio; it may gratify and in some respects surprise the reader, we don't say in what way—that will depend on his own whereabouts and his previous impressions as to the agricultural capacity of this young giantess among the sisterhood of American Republics. It would be easy, we should think, to add various queries to such Circulars that would elicit highly interesting information—as, for instance, the ordinary price of land; the price and the hours of labor; and then as to orchards, dairies, the kind of animal power, &c.

| Counties. | AVERAGE PER ACRE. | | | Counties. | AVERAGE PER ACRE. | | |
|-----------------|-------------------|----------|----------|------------------|-------------------|----------|----------|
| | Wheat. | Oats. | Corn. | | Wheat. | Oats. | Corn. |
| | Bushels. | Bushels. | Bushels. | | Bushels. | Bushels. | Bushels. |
| Adams | 10 to 20 | 20 to 30 | 20 to 50 | Knox | 25 | 40 to 45 | 35 to 40 |
| Allen | 15 | 50 | 50 | Lake | 12 to 14 | 35 to 40 | 30 |
| Ashland | 20 | | 40 | Lawrence | 10 | 25 | 30 |
| Ashabula | | | | Licking | 20 | | |
| Belmont | 15 to 25 | 30 to 40 | 40 to 60 | Logan | 15 | | |
| Champaign | 15 | 20 to 25 | 45 | Lorain | 15 | 40 | 40 |
| Clark | 18 | 35 | 40 | Madison | | 25 | 30 |
| Clermont | 10 to 25 | 25 to 40 | 35 to 70 | Marion | 16 to 20 | | 35 to 40 |
| Columbia | 20 | 45 | 40 | Medina | 20 | | |
| Coshocton | 17 | | 35 | Meigs | 12 | 30 | 35 |
| Crawford | 20 | 40 | 40 | Morgan | 15 | | 40 |
| Cuyahoga | 20 to 40 | | | Montgomery | 18 | 30 | 50 |
| Delaware | 20 | | 45 | Miami | 17 | 30 | 40 |
| Fairfield | 15 to 30 | 20 to 40 | 36 to 50 | Muskingum | 8 | 30 | 40 |
| Fayette | 12 | | 40 to 45 | Perry | 20 | | |
| Franklin | 12 | | 40 | Portage | 20 | | |
| Gallia | 13 | 25 | 25 to 30 | Pickaway | 14 | | 50 |
| Geauga | 20 | | 40 | Richland | 1,200,000 | 600,000 | 300,000 |
| Greene | 15 | 30 to 35 | 35 to 40 | Ross | 10 | 23½ | 48½ |
| Hamilton | 16 | | 50 | Stark | 20 | 40 to 50 | 30 to 35 |
| Hardin | 20 | | 35 | Summit | 20 | 45 | 35 |
| Harrison | 20 | 30 | 40 | Washington | 15 | 33 | 45 |
| Highland† | | | | Wayne | 20 | 40 | 40 |
| Huron | 20 | | | Wood | 20 to 25 | | 40 to 50 |

*4. I have no information derived from reliable sources. In the corn trade, we have seven distilleries (!!!) in this age of temperance—making daily, in the aggregate, 150 to 175 barrels, of 40 gallons each, of whisky. Two distilleries in my vicinity have taken in about 100,000—and “still they come.” From this data I compute that this year's crop will furnish distillers alone 400,000 bushels of corn.

As a set-off to the above, we must give the following from the same respectable reporter, Mr. James Ferguson:

There is a gradual progression in the upward tendency of Agriculture in the county; better hogs, sheep and cattle are being introduced—(horses neglected)—better varieties of wheat and corn are being sought for. Most of our farmers are nearly up with the times in agricultural implements; I know of nothing, however, that calls for *special notice*; yet all are *far, VERY FAR*, short of what the soil, situation, the times, the calling, and the age require.

The only association of agriculturists in the county is known as the “Franklin Agricultural and Horticultural Society.” We have been organized one year—number but 56 members—levy no tax, draw no money from the treasury—pay no premiums in money—make our certificates of merit suffice—have had one Fair—the exhibition respectable, exciting no little interest, while every one remarks that “the next will doubtless be a splendid affair.” *We have a fair prospect for a respectable farmers' library. Agricultural Chemistry is being studied by a few already, as well as Geology and Mineralogy*, while few could tell you the name of the “latest novel”—so far good; still we are most of us on that old “tread wheel”—that interminable circle which our ancestors have trod for the last thousand years—and too many planting and sowing by “the signs,” and “right time in the moon.” Farmers are getting rich here from Nature's bounties. We have the same geological formation, and nearly as good a climate as the famed PALESTINE of the Old World. Shall ignorance, bad tillage, and bad government of a first luxurious, then vicious, ignorant and degenerate race make this, as that, a desert waste!

Now is the time for the philanthropist and statesman to fix the standard of worth high in the intellectual and moral temple of fame; to fix the taste and elevate this first, greatest, and noblest of all pursuits, and he has the proud satisfaction of starting his race onward and upward to that high destiny in reservation for yet purer and nobler intelligences. How shall ignorance be driven out, superstition dethroned, listlessness aroused, lethargy thrown off, and the man be aroused to what he is, a *thinking, active, superior intelligence*, rather than a plodding drone.

† 6. No important improvements have, within my knowledge, been introduced in this country.

Allow me, in addition, to suggest that one of the most desirable and important improvements (1007)

These reports are evidently based, in a great measure, on conjectural estimates, but are doubtless made with a wish to arrive at and present the truth. If, then, where the estimate is, for example, from 10 to 20, and so in other cases, we take the medium as the average, it will be found that if we take these counties as the average of the State, the average product is in wheat about 17 bushels; in corn 40; and in oats 33. Can any one inform us, or give a guess, what was the average in Jersey, Delaware, Maryland and Virginia when they had been *opened* not longer than Ohio? Two friends of ours, one in Talbot county and one in Dorset, made last year, the first, more than 70 bushels of corn on upward of 40 acres, and the last more than 50 on 200 acres. They are, "av coorse," as the Irishman says, both subscribers to THE FARMERS' LIBRARY AND MONTHLY

would be the erection of manufactories, especially of wool and cotton, on the immense water-powers of our streams and canals. It is doubted if any section of the Union offers equal facilities for such establishments, in cheap and durable water-power, and in the abundance and low price of timber, stone, and all the materials for building, including the very small cost of lots and lands; and in all these respects no part of the State is more inviting to the manufacturing capitalist than the valley of Muskingum. To name only a single point: at Roscoe the canals bring together the whole water-power of the Tuscarawas and Walhonding, the latter standing in the canal at this place 40 feet above the level of the Muskingum, and the canal being comparatively little used, the whole power of the stream, capable of performing almost anything desired, could be used for manufacturing purposes; and sites for a whole manufacturing village could be purchased comparatively for a trifle. What I have said of Roscoe is a feeble portrait of the advantages for manufacturing purposes of hundreds of places in our State—to say nothing of the coal district on our north-eastern border.

Your honorable Board cannot do a better service to the agricultural and other interests of the State than by calling the attention of manufacturing capitalists to this subject. By establishing manufactories in the West, they would avail themselves of the certain and undisturbed *tariff of distance*; saving the carriage of goods from the East to the West, and the carriage of the raw materials, wool and cotton, and provisions from the West to the East; and these advantages, together with the cheapness of water-power, lands and building materials, would be unchanged by political ups or downs, ins or outs. Will you not present this matter in a strong and clear light to the great manufacturing capitalists of the Union?—urge them to come and see the immense capabilities and facilities with which we can present them.

Live Stock.—Horses 6,690; cattle 12,503; sheep 47,009; hogs 17,728.

† There is no report of average crops for this county, but in lieu of that we have something better—the following reflections by ISAAC SIMMS, President of the Agricultural Society of the county, which shows that one man, at least, is alive to the disgrace that attaches to all communities that betray indifference to the education of their children. He not only knows the seat and nature of the disease, but, like a skillful physician, he prescribes the appropriate remedy:

"In vain shall you address the man of gray hairs, who, having always plowed so, has yet harvested wheat, and who, having never manured, has yet gathered corn. But place his son and daughter in the district school, under a teacher of ordinary intelligence, who, having studied, shall teach, among other things, a *suitable course of rural economy and agricultural science*—to them, thus trained, rational experiment and accumulations of knowledge in Agriculture will become a necessity, and intercommunication of results and opinions a delight. *To the popular education, then, let the energies of good men be directed.* The district school system of Ohio is perishing by the most cruel neglect. It were capable of all that is elevating and excellent, were it made to improve with the growth of the people in numbers and wealth. *But it stands, while all else advances; and the youth crying for bread, receive a stone! Vast and illimitable are the sources of national greatness lying ready to be evolved in the untutored depths of the juvenile mind. To this level must Statesmen sink their shafts, before the clear waters of general intelligence will gush abundantly.*

‖ One of the most gratifying things in all these Reports, in our view, is the following—by whom it does not appear—from Miami county:

The number of members at present is seventy-five, with a reasonable prospect of a large accession before the commencement of the ensuing season. The Society having been organized at so late a period, it was deemed inexpedient to have an exhibition for awarding premiums the present year. This resolution was made in view of the chief benefits sought to be attained by the organization of Agricultural Societies. These advantages are to be found, not so much in the production of extraordinary results as in the establishment or discovery of means and processes by which a given result may be attained with the least amount of expenditure, whether it be of labor or of capital. SKILL and INTELLIGENCE are to be encouraged, rather than a blind reliance upon chance and the operations of Nature, without those aids which she requires at the hands of man, if he would enjoy those bounties which she is capable of bestowing. In short, we believe that the premium should be awarded to the MAN, rather than to the bullock or the porker brought for exhibition. The Society have appropriated the *sum of one hundred dollars for the purchase of books to form the commencement of an Agricultural Society.*

JOURNAL OF AGRICULTURE—not by any means because they are our friends—for we trust we have many who are not subscribers *yet*—but, we infer, because they make heavy crops!! But, all jesting apart, we should be glad to have the statements of the average of staple crops in other States, on the most reliable data, together with the general price of land and labor. We confess we are persuaded that most of those who think of moving from the old States had better let very well alone, and turn to improving their own land—planting orchards, improving their stock, repairing their buildings, retrenching expenses, and especially to the establishment of better systems of education; and let them mind first to elect *thinking, capable men* for their Legislatures, and then take care who are put on the Committees on *Education and Agriculture*!

GUANO.

HOW, AND FOR WHAT, AND IN WHAT MANNER TO BE USED.

WE are not advised of the general results of the use of this substance in the United States during the last year. The truth is that our country is deficient in the means of making general reports, such as are more easily prepared and published with much usefulness to the public in other countries. In the first place, our *dominion* is too extensive, and then we are deficient in the organized institutions for the benefit of Agriculture that exist and faithfully sympathize and coöperate with each other for common welfare in other countries.

The first difficulty is likely to be increased; for we are expanding, *ad infinitum*. Otherwise, and even as it is, there are reasons to hope that the last-named obstacle is being diminished, and that the cultivators of the soil are gradually coming to a better understanding with each other in all that relates to their character and concerns, political and practical. But all depends on a reform, gradual though it be, in our systems of education, *adapting them expressly to the agriculturist's own pursuits*.

We believe—(and, on this subject at least, we may be allowed, without being considered an intruder, to entertain an opinion)—we believe that failures in the use of guano have proceeded, in our country, principally from two causes:

1. Sufficient care has not been taken to prevent all actual contact between it and the seed of the crop to which it has been applied.
2. It has not had the benefit of a certain degree of moisture, which seems to be indispensable to the development of its fertilizing powers—and this has resulted from the natural dryness of our climate compared with that of England, where it continues to give satisfaction, aggravated by exposing the guano too near the surface, which is fatal to its operation unless it be a wet season.

Mr. McHenry, an enterprising (in a word, a *thinking*) farmer of Maryland, as has been already stated, is a decided advocate of the use of guano, after many trials, and he spreads and plows it in for corn; and we see it stated in the proceedings of that old, persevering, zealous and efficient Farmers' Club of Neweastle county, Del., that Mr. Jones, of Wheatland, intends to follow that practice; and it may be added that *his* purchase of eighteen tons for use this year, is a fact of no little significance in its favor.

It is scarcely necessary to repeat that, besides that it combines in a very pe-

culiar manner many of the most essential fertilizing properties and constituents of the various crops, the value which it derives from its *portability* almost defies calculation ! For in no country in the world does a labor-saving property of itself confer so much value on anything as in this. While labor is everywhere dear, food and everything else, and especially land, is everywhere metaphorically and literally "*as cheap as dirt*."

Let us stop here again to say that Farmers' Clubs should be formed in every election district in the Union, and that, through their instrumentality information might and ought to be collected on all such subjects as this. Why, for example, through a Farmers' Club at Upper Marlborough, or at Leonardtown, or at Easton, or at Cambridge in Maryland, might not every reading farmer in the county be made perfectly familiar, through the papers at those places, with all that has been done and experienced with guano or lime throughout these counties respectively up to this date ? But we must come back to our purpose, which was merely to submit the following instructions for the use of guano on turnips by a Scotch farmer of great experience.

If we are met with the standing interrogatories—Don't you know the turnip culture is not the branch of husbandry in this country that it is in England ? we answer Yes ; and what fool does not ? But the observant reader will see that there is still ample room and verge enough to turn all such communications of experience to useful account. If we may not apply guano to turnips on a large, we may on a small scale ; and besides, the directions given may be useful in the application of guano to any other drilled crop, and corn is getting to be one of them.

From 'The (London) Plough.'

METHOD OF APPLYING GUANO FOR TURNIPS.

Sir : I am desirous, through the medium of your journal, to call the attention of agriculturists to the proper mode of employing this valuable manure. I have every reason to believe that want of success, or disappointment, from the use of this article, in so many instances, in England, has arisen altogether from inattention to the proper way of applying it ; and I have no doubt that, were a fair trial in every instance made, according to the method adopted in my own practice, and so generally allowed here, guano would soon be in as universal repute in England as it is now throughout Scotland. I feel the more called on and encouraged to communicate my farther experience, and to make the present recommendation to my brethren in the South, as I believe I was among the first to point the attention of agriculturists, generally, to the practical value of this first of manures in the growth of turnips, and have since very successfully, and without one instance of failure, extended its application to this crop, to the extent of considerably upward of 100 acres, in each of the two seasons. My method, then, is simply this : After reducing the guano, by means of bruising and sifting, to an equal and uniform consistency, to apply it in the drill, by the hand, without any admixture of other substance. The drills being formed in the usual way, as in Scotland generally, for the reception of other manures, in prepa-

ration for turnips not quite so deep, perhaps, as for farm-yard dung, the guano is applied from the hand, in the center of the original rib, or drill, which being reformed by being split, the manure is effectually covered, so as to prevent injury to the seed by contact, which, it is presumed has been the entire cause of failure when a different method has been pursued. The seed is then sown, by the ordinary drill-machine, on the top of the drill so made up. In no case ought it to be attempted to put in the guano along with the seed, or by means of any implement where a full covering of earth does not intervene between the manure and the seed ; and, indeed, from the nature and consistency of the material, it is very doubtful if it is at all possible, by any machine, to distribute it in that equal manner necessary for the growth of a uniform crop. I may farther mention that the guano is here applied by women or boys, who, upon the land being stepped off, are supplied from a ear at either end of the drills, with no more than is sufficient for each ; and in this way, after a few turns, they obtain an exactitude in the operation, which is abundantly evidenced from the precise equality of the crop, and which may be said to be characteristically indicative of turnips manured with guano. The usual quantity I have employed per acre is 3 cwt. ; and, though it does seem of small bulk to distribute so far, and, indeed, when

scattered along the drill, to appearance almost invisible, still there will be found no practical difficulty in the operation, and, I have no doubt, perfect satisfaction in the result. The quantity required for any ordinary length of drill is thus easily carried in an apron, and is much more manageable than if any admixture had taken place. Thus, upon a length of 200 yards, the drills being 27 inches apart, not more than 11 lbs. will be necessary, at the above rate, so that one woman can easily accomplish 3 acres a day. The expense of the operation is thus almost nothing, while it affords great facility to increased expedition, at so important and precarious a season, seeing the success of the turnip crop requires the operation of sowing to be limited to a very short period of time. It will be noticed that guano, to be properly adapted for being used

in the manner above recommended, must be of a consistency fitted for equal distribution; and, in all cases, farmers should particularly observe, besides, that the analysis is favorable, that the material is free from moisture, and so composed, if containing lumps, that these may be capable of easy reduction by pressure, or with the hammer. When guano is so moist as to resist being again reduced to powder, after having been compressed, or the lumps already existing refuse to yield to trituration, it is quite unfitted for efficient distribution, with a view to the growth of turnips in the manner I have proposed; and by no process of admixture with other bodies can it be rendered so suitable, but could only be applied, with any advantage, as a top-dressing to green or other growing crops.

In reference to the price, which, when practicable, should help to illustrate all such discussions, the last "American Farmer" says of guano:

We regret to learn that the dealers in this article have considerably increased the price recently. Peruvian had been selling at \$11 50 per ton, but is now \$50. The cause may have been produced by the rise in the price in England. From the Sheffield and Rotherham Independent, of Feb. 27, received by the *Hibernia*, we make the following extract:

"*Corn Exchanges*.—A good stroke of business has been done in the guano trade since our last, and the stock of the country having been considerably reduced, prices, as foretold a fortnight ago, have advanced. All qualities have risen from 20 to 30 shillings per ton, excepting Saldanha Bay, which is quoted only 10 shillings per ton higher."

By-the-by, we may notice that Mr. Naill, of the Senate of Maryland, vigilant for the interests of his class, got a law passed at the last session for the inspection of guano. In England the farmer, in most cases, we believe, requires to be furnished with a sample and a well-assured analysis from the merchant, and comes down on him for damages if the mass is not found to correspond. We have some doubts whether in all such things, even in the inspection of tobacco, it would not be better for the producer if the article were left free to be regulated by the conflicting interests of the two parties, untrammelled by legal fetters.

While on this subject, truth and propriety suggest a remark on the powerful agency sometimes exercised by public-spirited individuals in matters of public concern, where they have no private ends to be answered. In regard to this second attempt to introduce a knowledge of the wonderful properties of this substance to the notice of American agriculturists, if it had not been for the untiring perseverance of Mr. GEORGE LAW, of Baltimore, in this matter as in whatever else he undertakes, availing himself of a correspondence as extensive as it is valued by those who enjoy it, the use of guano would have made its way but slowly, in all probability—if, in fact, it had not failed again now as it did when the substance was exhibited and its virtues proclaimed so many years ago in Maryland.

Without any of the mere mercenary promptings of the monopolist or the speculator, Mr. Law scattered much of it, far and wide, gratuitously, and instigated most of the experiments that were made demonstrative of its qualities as a manure at once the most condensed and, if not the most enduring, the quickest and the most convenient of application.

We mention it on the principle that justice is due even in fuller measure, to those who seek no recompense for useful actions but the gratification of their own kind nature in the performance of them. Why is it that by the Press,

whose office it should be to inculcate the performance of actions the most *useful* to society, it is denounced as abject flattery to praise the most benevolent and beneficent deeds in *peaceful life*, yet quite legitimate to extol to the seventh heaven the deeds of living actors in scenes of "blood and carnage?" All this may be right and proper; but be it our humble duty to honor, in our way, and to hold up to emulation the example of those who best teach us to fructify the earth.

Since penning the above, we find the following in an array of striking "*facts*" illustrative of the effect of guano, in that staunch old agricultural periodical, the *AMERICAN FARMER*, fed editorially, as it would appear, with that *elixir vite* which with age imparts strength. This fact is so extraordinary that it were almost to be wished the *name* of the farmer, his locality and soil, had been given, although, for ourselves, the confidence of the Editor of that paper in the accuracy of the statement makes "assurance doubly sure." And, after all, it does not excel the influence of plaster of Paris (gypsum) as shown in the case of the late Governor BOWIE, who gave \$1,400 for 200 acres of land, and on turning in the first crop of clover that followed the application of the gypsum, made 100 hogsheads of tobacco on 100 acres of it. The tobacco was sold for \$10 a hundred, or \$10,000 for the crop. Governor B. was "every inch a man" on whose word one might safely stake his life.

An acquaintance of our informant bought, in his neighborhood, a farm consisting of upward of 200 acres, for \$1,200. This farm had been worked without manuring until everything partaking of the character of fertility had been extracted from it, as may well be imagined from the price we have mentioned above. In the opinion of the owner of the farm in question, without manure, it would not have yielded 6 bushels of wheat per acre; and this opinion was corroborated by that of our informant. In the fall of 1845,

the present proprietor came into possession of his farm, and having faith in the virtues of guano, purchased a sufficient quantity to enable him to spread on each of 100 acres thereof, 350 lbs. of that manure, which he caused to be *plowed in*, and then sowing his wheat, harrowed the latter in. The product was 25 bushels of good wheat per acre, from the sale of which he was not only enabled to pay the whole of the purchase money for the entire farm, and the cost of the guano, but to have a surplus left.

CONSUMPTION OF GRAIN IN GREAT BRITAIN.

SIR: Messrs. Sturge's Circular for this month has to-day been received here, and it will doubtless find a place in your columns, as being at all times a valuable and important document, and never more so than at the present moment. The bearing of the writer's views is evidently of a pacifying nature, but on studying its contents I cannot do otherwise than form quite an opposite opinion. Admitting a *doubtful point*, that the last year's crop of wheat was an average one, how can that and the stocks as there stated—equal to 6,000,000 qrs.—suffice for twelve months' consumption, barley, oats and potatoes being deficient, and seeing that the annual importation of all descriptions of grain for years past averages nearly 6,000,000 of quarters, which quantity is only adequate to supply the loss of the potato crop, and thus requiring the whole quantity of wheat *supposed* to be on hand at the time of harvest?

| | |
|--|----------------|
| Taking the average import of grain (including Ireland) into Great Britain, upon 7 years..... | qrs. 6,000,000 |
| The loss of the potato crop..... | " 6,000,000 |
| The deficiency of the oat and bean crops (1-5th)..... | " 4,000,000 |
| Ditto barley crop (1-4th)..... | " 1,500,000 |
| Total..... | " 17,500,000 |
| Less supposed quantity on hand..... | " 6,000,000 |
| Shall we not require of foreign grain..... | " 11,500,000 |

For at the time of harvest the stocks of oats, barley and beans, of home growth, were nearly exhausted; and this quantity, about double of our late large annual imports, would require an amount of shipping of about 1,725,000 tons.

Should the next harvest be a late one, it must be borne in mind that our monthly consumption is 1½ millions of wheat. For barley, &c., we might wait; but of oats we should require a considerable quantity, not less than one third of the quantity of wheat named.

I respectfully beg the attention of Messrs. Sturge & Co. to the foregoing, and should feel obliged if they can point out any inaccuracy in the statements given, my object not being controversy, but, as far as it can be ascertained, to give a correct statement of the real position of the country on the momentous question of a supply of food. I am, sir, your obt's serv't. A SUBSCRIBER.

Hull, Feb. 5.
(1012)

[London Mark Lane Express.

CAPITAL AND ENTERPRISE.

THE INFLUENCES BY WHICH THEY ARE TRANSFERRED FROM PLACE TO PLACE.

Is a late number, reflecting on the tendency of enterprise and capital to flee from the country to cities, and thence inferring that facilities exist in the towns in the way of capital and encouragement in various ways, not to be enjoyed in the country, we invoked light on the subject, and took the liberty of referring to particular gentlemen, publicists and authors, whose minds had been led, by their studies and professions, to such subjects.

From one of them we received the following, in a very few days after that number was published, but yet not in time for the April issue.

We shall give, as soon as possible, the form of the general laws under which associations of capitalists are so easily formed, believing, with our correspondent, that the use of money should be left as free as possible, and that wherever the trade in it shall be least hampered by legislative restrictions, there will it most abound, and there will it attract and reward labor and enterprise of every sort. We have not room for these laws in this number. In fact, there will be in it too little variety, perhaps, "any way we can fix it;" but we rely on the solid value and wholesomeness to make up for the want of variety in our bill of fare for this month. The Letters on Sheep Husbandry necessarily exclude lighter articles, but have they not their intrinsic and amply remunerating value for all who have, or are likely ever to have, any concern in that very important branch of husbandry?

We shall look, too, into the subject of Inspection Laws, about which our Maryland friends are moving, as we apprehend, with not the longest-sighted views of the subject; but we don't yet exactly see our own way clear. In fact, we want time for investigation. Here, too, we hope for the aid of a gentleman who has the elegant leisure and the benevolent disposition to give us the assistance of his powerful pen, which illustrates whatever it touches.

Dear Sir: You appear to be at a loss to understand the causes of the apparent deterioration of houses and farms in Western New-York: of the transfer of capital from the country to the cities: and of the absence of value in the lands of Virginia and South Carolina: and somewhat disposed to think that all are connected with the state of the laws regulating the rate of interest.

All the facts are, as I think, easily explained by aid of a very simple law, that is universally true, as all laws must be, and which, nevertheless, is opposed to the very prevalent doctrines of Ricardo and Malthus. Being so, I shall not now insist upon it as regards Europe, but you can readily satisfy yourself by a comparison of Massachusetts, New-York, Pennsylvania, Ohio and Indiana, on one hand, with Delaware, Maryland, Virginia and South Carolina on the other, that it is universally true in these United States. It will be found equally true in comparing one part of the same State with another part—as, for instance, Lowell and its vicinity with the neighborhood of Cape Cod: Schuylkill county, Pa., with Bucks, or Delaware, or Adams, whose progress is comparatively slow; or Hamilton county, Ohio, with some of those not yet possessed of the facilities afforded by railroads or canals; and equally so in comparing the several parts of New-York, Philadelphia or Baltimore with each other. It is as follows:

Wherever population tends to increase, there exists a tendency to a still more rapid increase of wealth, which manifests itself in an increased demand for labor, increased wages, increased tendency to the division of land into smaller farms and into building lots, increase in the number of houses, and improvement in their character and appearance, as well as in those of the people by whom they are occupied. Whenever, on the contrary, in any country or place, population becomes stationary, or tends to decrease, there arises a tendency to a diminution of wealth more rapid than that of population, accompanied by a state of things directly the reverse of that above described. Such is the law, and I will now

proceed to show that the facts to which you refer as existing in Western New-York, are in direct accordance with it.

By reference to the Merchants' Magazine for the present month (March), you will see, at page 295, a comparison between eight of the principal counties of the Genesee Country with a similar number of counties in Michigan, showing that while the population of the former diminished, between 1840 and 1845, from 321,538 to 317,613, the latter grew from 109,183 to 141,247; and that while the product of wheat in the former remained almost stationary, its advance in the latter was enormously great. From these facts, it is obvious that the emigration from Western New-York exceeds the immigration, and that there must be more sellers of land than purchasers—a state of things that will account for the deterioration of appearance to which you refer, always a certain sign of diminished population and wealth.

Why do people leave New-York for Michigan? To answer this question requires local knowledge that I do not possess, and you must seek the information elsewhere. When you can obtain that, you will understand the cause of the state of things you have noticed.

Your friend attributes the state of things which you describe to the high legal rate of interest, by means of which capital is attracted from the country to the city; but the rate is the same in both, and, if the existence of such a law tends to produce that effect, why do not both country and city equally attract it from other quarters where the legal rate is lower—as, for instance, Massachusetts, Connecticut and New-Jersey, where it is only six per cent.? Why is it that those States retain their capital, applying it to the fertilization of their soil, the extension of their manufactures, and the improvement of their communications, under a six per cent. law, while Genesee is unable to retain hers under one that allows the owner to demand seven per cent.? Could this happen unless there were local causes tending to produce it? I think not. The question now arises, Does any large amount of capital from Western New-York seek permanent investment in the city? It appears to me much more probable that the tendency is toward Michigan, where capital is *less* abundant than in Genesee, rather than toward New-York, where it is *more* abundant, and where it must always come into competition with that of the adjoining States, in which six per cent. is the usual rate. Population and wealth are, I think, both traveling from Western New-York to a region farther west, in which labor and capital can be made more productive. Such being the case, a reduction of the rate of interest would only accelerate the progress of expulsion, and increase the downward tendency of which you speak.

Every increase in the freedom with which capital may be applied tends to cause it to flow inward, and to produce equality in the supply and steadiness in the price. Every restriction tends to force it out, and to produce inequality and unsteadiness. In New-York, contracts are legal up to seven per cent., and there is, consequently, more freedom for the exercise of individual will, as regards its application, than there is in New-Jersey, where six per cent. is the limit. There is, therefore, a tendency to the transfer of capital to New-York from the latter State; but, if the rate be reduced to the same standard, every Jerseyman will prefer investments at home to those abroad, and the power of employing labor in the first will be diminished, while it will be increased in the last. In Missouri, freedom of action in regard to the rate of interest has existed, up to the point of ten per cent.; and that State has, in consequence, attracted large amounts of capital from the East. It is now, however, about to reduce the rate, the effect of which will be to cause the holders of mortgages to convert them into money to be drawn home, and thus the State will suffer from diminution of the right of individuals to judge for themselves of the terms upon which they will trade with each other. Every step in that direction is wrong, and tends to the expulsion of labor and capital; and every step in the opposite one—whether by removal of restrictions on the rate of interest, or on the right of individuals to associate together for banking or other purposes, and to determine for themselves the terms upon which they will trade with the public, whether of limited or unlimited liability—tends to promote the influx of wealth, the increase of population, the rise of the value of labor, and the advance of improvement—physical, moral, intellectual and political. There is more freedom of association in Rhode

Island and Massachusetts than in any other part of the Union, and therefore more steadiness in the rate of interest and in the value of property, with less necessity for usury laws, and consequently a more rapid advance in prosperity. Those who would desire to be as prosperous should commence by a determination to be as free, and not seek to obtain the same object by means diametrically the reverse of those which are there employed, as is done in Pennsylvania, where freedom of trade is held by those who call themselves Free-Traders, to consist in *not* permitting men to determine for themselves the terms upon which they will associate with each other, for the purpose of trading with the public, even where that public is left entirely at liberty to judge for itself of the terms, and to determine whether it will trade with them or not.

A comparison of the systems of those two States with that of Pennsylvania will serve to exhibit the process by which capital is driven from the country to the cities, even where its owners would prefer to retain it at home under their own management, if permitted by legislators to determine for themselves the mode in which it should be employed.

In no part of the world is the doctrine of equal rights so well understood as in New-England, and in no part of New-England better than in Rhode Island and Massachusetts. What A. and B. can do, all the rest of the alphabet can do, and therefore monopolies have no existence. Every set of men that desires to associate for the purpose of trading, on the footing of a corporation, can have themselves recorded as such by the Legislature, unless there exist good reason to apprehend fraud. Such is the case, among others, with those who desire to associate for the purpose of opening places for trading in money, *to* which those who have a surplus can bring it to be exchanged for securities, and *at* which those who have securities can apply for the purpose of converting them into money: money-shops, or banks—places quite as important for those who desire to have securities and money fitted to each other, as shoe-shops to those who desire to have shoes fitted to feet, and feet fitted to shoes—and *quite as harmless*. Such being deemed to be the case, it is not thought necessary to subject the parties associating for the purpose to any liabilities, or penalties, that need prevent prudent and cautious men from taking part in their formation and management. The consequence is that there are distributed throughout those two States nearly 200 money-shops, constantly engaged in the collection and distribution of capital, owned by the people of the neighborhood, who themselves manage their own property, and are not compelled to transmit it to Boston, to be managed by others of whom they know but little; the general result of which is, that the trade in money is attended by less loss to those who deal with banks, and more uniform, steady and moderate profit to those who own them, than in any other part of the world. Throughout both States, every man is within reach of a money-shop; and the industrious and prudent farmer, shop-keeper or mechanic can at any time command small loans to aid him in his business. In no part of the world does capital distribute itself so equally—falling almost like the dew, and fertilizing where it falls; in none is there a currency so inexpensive, and in none is the quantity of currency so little liable to fluctuation. The system is almost perfect, because almost perfectly free; and it would be difficult to suggest an improvement, unless it were the passage of a general law that should relieve the Legislature from all necessity for interference in any way, while sweeping away the few remaining regulations, some of which seem to indicate a personal liability that has no real existence, and thus to make it as free in appearance as it is in reality.

Pennsylvania, on the contrary, is the land of monopolies. Equality of rights is unknown. A. B. and C. are perpetually obtaining the *privilege* of doing things which to the rest of the alphabet are forbidden. Large associations obtain grants of charters which to small ones are denied. On one day a bank of five or thirty-five millions is organized in the city, and on the next the citizens of a large agricultural district, suffering for want of a little money-shop, are denied the exercise of the right of making one, unless they will assume enormous liabilities. Of late years, association, the great characteristic of the age, and of civilization, has come to be considered anti-democratic, and the perfection of democracy is thought to be realized in the form of wealthy private bankers and manufacturers, deemed highly preferable to unions of little capitalists, employers and workmen, such as are seen

to exist at Lowell and elsewhere in Massachusetts.* To prevent association, pains and penalties are devised, and thus, if a thousand people desire to create a shop at which money may be exchanged for securities, or a factory at which cotton may be converted into cloth, it is held to be necessary that *each of the thousand*, having an interest of \$100, and entitled to claim, at the most, a dividend of six or eight dollars per annum, shall be responsible for *all the debts* of the concern, because entitled to receive the *thousandth part of the profits*, although the whole capital, amounting to \$100,000, must be sunk before any creditor can lose a dollar. Prudent men know that a well-managed bank, or factory, cannot, on an average, divide more than 7 or 8 per cent.; they know that they can obtain six per cent. on mortgage, *without responsibility of any kind*; and they likewise know that mortgages on city property are more readily realized, and the interest thereon more punctually paid than on country mortgages; and thus everything tends to the transfer of capital to the cities—whereas if legislators could but open their eyes to the fact that men understand their own business, and are more competent to determine for themselves the proper mode of trading with each other than their representatives at Harrisburg are to do it for them, the farmer's capital that now goes to Philadelphia for the purchase of bank stock or mortgages would remain at home, benefiting those who desire to borrow; and, in a much greater degree than at present, those who are able to lend. A large portion of the State is at this moment deprived of all the advantages that would result from the establishment of places for the exchange of money and securities for each other, and the owner of capital is compelled to intrust it to the management of people at a distance, when he would prefer to keep it at home, while his neighbor's farm or work-shop is unproductive because unable to obtain occasional small loans to enable him to purchase stock, lime, &c., or to make improvements that are needed.

What is here said of Pennsylvania is equally true of most of the States south and west, all of which seem disposed to vie with each other in imposing restraints on the trade in money, the most important of all trades, and equaling in amount all others put together; as every exchange of commodities is made at a money price, and involves the necessity of a contract for the delivery of its equivalent in money.

You ask why land in Maryland, Virginia and South Carolina has so little value when compared with that of England or of France. To obtain an answer to this question we must first determine what is the cause of value in land. Of itself it certainly has none, as can be seen in the fact that thousands and tens of thousands of acres of the most fertile lands in Texas have been given to individuals on condition of settlement, and that when partially settled they could not be exchanged for half as much as they had cost. Such was the case with those granted to William Penn, and to all others of the early settlers of these United States. The lands of Iowa and Wisconsin have, in part, attained a value of \$1 25 per acre because of a great expenditure of capital in the formation of roads and canals leading from the lakes to market, but they are in many cases dearer, fertile as they are, at that price, than lands in Pennsylvania or New-York at \$80 to \$100 per acre. Clear and inclose them, and give them roads and canals, and they will gradually acquire farther value, rising with the growth of wealth and population, *but never equal in amount to that of the labor that has been expended upon them*

* "LOWELL, Feb. 21, 1847.—HON. A. STEWART: Dear Sir—Your favor of the 18th inst. is received, and I am happy to furnish you such facts and information as I possess touching the subject of your inquiries. It is a fact that hands who work in our mills are, many of them, stockholders. It is the case to a greater or less extent in all our companies here. In the Middlesex (woolen) there is about \$60,000 of its stock owned by men who work in their mills. In the Merrimack yard there are thirty men who own stock, say about \$80,000. There are several who own in the concern under my charge. The stock of these companies, as a general thing, is held in small sums, say a few thousand dollars each. It is constantly in the market for sale, and any person can purchase who has the means. It is considered a desirable investment for widows and orphans, and clergymen, because they receive the benefit of the sagacity and skill of the best business men of the country. These corporations, with their hundreds of stockholders are much more democratic, far easier of access to men of small means, than the association of individuals as co-partners. It is associated wealth, accessible to any person who has the amount of one share, which may be \$100 or \$1,000, as the Legislature that grants the act of incorporation may judge proper. What is there in all this that looks like monopoly or favor to the rich capitalist? With my hundred or thousand dollars I can purchase a share which will give me the same per cent. on my one share, that my rich neighbor who has his hundred shares receives.

"There is nothing about it exclusive. The man of very small means is enabled to invest and realize a benefit from wealth and skill which he could obtain in no other way. Yours, very truly, H. BARTLETT."

—a fact universally true, and carrying with it abundant evidence that land owes all its value to the labor applied to its improvements.*

Men who are willing to work seek Illinois, Wisconsin and Iowa, and each takes a piece of land that he is to render valuable by means of his labor, and that constitutes a sort of little savings box, in which he deposits all his wages over and above what is absolutely necessary for the support of himself and his family, as well as all the spare hours and half hours that would otherwise be unemployed. Every additional deposit therein tends, as with children who have penny-boxes, to increase his desire of accumulation, and to increase the habit of industry and economy. With the growth of population, the number of these little savings banks is steadily increasing, and by degrees a wealthy community arises, the members of which, by combining their means, are enabled to create money-shops at which poor but honest and industrious men can obtain loans, while applying other portions of those means to the construction of turnpike roads, and ultimately railroads or canals. Wealth attracts wealth: and every new house, or town, or city, or road, whether of stone or of iron, tends to bring new laborers and to produce new divisions of land, new houses, and new savings boxes, and to cause the construction of new roads and canals. In the South these little savings boxes have no existence. The laborer has no property, and has no inducement to exertion, and his master has no economy. The land is exhausted, and deteriorates in value until at length both laborer and employer are compelled, if they would continue to live, to run away from it. In the first case we see the attractive power of wealth, while the second exhibits the repulsive power of constantly increasing poverty. Population diminishes, and land loses the little value it once possessed.

The people of the South burn the candle at both ends. They offer no inducement to economy or exertion on the part of those who labor, and they despise labor too much to acquire, themselves, the habit of employment, by aid of which they would become economical. In New-England, all work and all spend liberally in proportion to their means; but there is very little waste of either labor or capital. The results of these different modes of action are widely different. The southern planter is like the elephant, who leaves behind him scarcely any record of his existence; while the Yankee resembles the coral insect, whose labors and habits of association are attested by the formation of extensive islands destined, perhaps, at some future time to be combined, by the farther labors of these industrious creatures, into a vast southern continent. Were the people, *white and black*, of South Carolina swept away, what would remain to give value to the lands? Almost nothing! Compare, I pray you, the condition in which their successors would stand, with that of an equal number coming at once into possession of Massachusetts, with its towns and cities, its factories and ships, its turnpikes and railroads, and then answer for yourself the question "Why it is that land in the South is so nearly worthless?"

Mr. Calhoun holds that South Carolina exhibits to the world a model of society the most perfect that exists. If other people thought so, there would be an influx of population and of wealth. *If his countrymen thought so themselves they would not run away from it as they do.* If it were really so, there would be a gradual diminution in the size of farms or plantations, and an increase in the number and quality of houses, whereas the present tendency is directly the reverse. If they wish to continue their society in its present state of perfection, they must resign themselves to constantly increasing depopulation and poverty. If, on the contrary, they desire their lands to become valuable, they must make it the interest of the laborer to work and to economize, by securing to him the enjoyment of the results. They must teach *the people* to make saving funds by aid of which, eventually, railroads and canals will be constructed: and nothing will be done to render property valuable until *the whole people* shall have acquired an interest in exerting themselves for the accomplishment

* The United States are the largest landholders in the world, and they obtain their land on the lowest terms. Nevertheless, they would be ruined by the ownership were it not for their entire exemption from contributions, in the form of taxes, toward the improvement of their own property. They sell the best lands, and the purchasers pay the taxes thereon for making roads and building court-houses, while making private contributions for churches, &c. &c., and thus the second, and third, and fourth qualities gradually acquire value equal to \$1 25 per acre, and are sold. But for this, the public lands would bankrupt the Treasury, although obtained originally for almost nothing.

of that object. When this shall come to be done, wealth and population will increase and emigration will diminish; but until it shall be done, the former will diminish and the latter will increase, as will be proved by every day's farther experience. The sooner they satisfy themselves that slavery, although bad for the slave, is worse for the master, and adopt measures for *permitting** the gradual extinction of the system, the sooner will land acquire value; but until that time shall come, the tendency will be rather downward than upward.

I have thus endeavored to furnish the answers you desired, and now remain
 Yours, very truly. C.

March 6. 1847.

CARCASS WEIGHT OF SHEEP.

FROM the nature of the covering of sheep, it is only when these creatures are recently shorn of their fleece, that dimensions for ascertaining their carcass weight can be taken with accuracy; and, in so small an animal as the sheep, any inaccuracy in measurement would lead to much too great a proportional discrepancy to the true carcass weight to be of practical utility. The following observations will therefore be confined to the proportion of carcass to the weight of the animal alive.

The proportion of mutton to the live weight of sheep is somewhat, but not greatly, different to that of the carcass weight to the live weight of neat cattle. The specific gravity of mutton is less than that of beef: so far the proportion of the carcass to the live weight of sheep will be less than the proportion of the carcass to the live weight of oxen; but, when sheep are in a fat state, the thickness of their flesh, in proportion to their size, is greater than that of oxen, the difference being fully equal to compensate the less density of mutton. The offal of sheep is lighter in proportion to their live weight than that of oxen, excepting when sheep are in wool, at which time their skins proportionally exceed the hides of beasts. So that, when the greater thickness of flesh and small general offal is set off against the less density of mutton and the fleece, the analogy found to exist between the proportion of mutton to the live weight of sheep, and that of beef to the live weight of oxen, is not surprising.

From the experiments I have made, I do not find that so much depends upon *breed* in causing a variation in the proportion of mutton to the live weight of sheep, as I have found to be the case with respect of beef to the live weight of cattle. In sheep, when newly clipped, I have found a very close uniformity in the proportion of mutton to live weight of different breeds in equal condition, so much so that I have reason to believe that the only difference from breed arises from the greater or less fleece of wool peculiar to any particular kind of sheep; at any rate, the difference from breed, independent of the difference of the weight of fleece, is too insignificant to require classification as in the case of oxen. The breeds of sheep on which I have had most opportunities of making observations are the Leicester, the Cheviot, the Black-faced mountain sheep, and crosses of the Leicester with both of the latter breeds. I have not made any experiments myself on the proportion of mutton to the live weight in South-Down sheep; but I do not apprehend that there will be any difference between them and Leicester sheep in equal condition, excepting so far as the proportion may be affected by the difference in the weight of fleece.

The subjoined Table shows the proportion of mutton to the live weight of Leicester sheep—namely, when in the wool after Christmas, and in summer when recently clipped:

| Live weight of Sheep in
stone, 14 lbs. avoird. | Per cent. of Mutton. | |
|---|----------------------|--------------|
| | In wool. | Newly shorn. |
| Above 20..... | .71 to 72 | 75 |
| 19 to 20..... | .69 to 70 | 73 to 74 |
| 17 to 19..... | .67 to 68 | 71 to 72 |
| 16 to 17..... | .66 | 69 to 70 |
| 14 to 16..... | .64 to 65 | 67 to 68 |
| 12 to 14..... | .62 to 63 | |
| 11 to 12..... | .60 to 61 | 64 to 65 |
| 10 to 11..... | .59 | |
| 9 to 10..... | .57 | 62 to 63 |
| 8 to 9..... | .55 to 56 | 60 to 61 |
| 7 to 8..... | .53 to 54 | 59 |
| 6 to 7..... | .51 to 52 | 57 |
| 5 to 6..... | .50 | |

* I say "permitting," because I would desire only to see the majority of the people of the South granting to the minority the right to do what they like with their own, and emancipate them if so disposed. I have no desire to see any interference with the right of property.

EXAMPLES.—The following were five extraordinary fat two-year-old Leicester wether sheep, fed by the Duke of Northumberland, and slaughtered by Mr. March, of Greenside, near Gateshead, in the county of Durham, in January, 1846:

| | | | st. | lbs. | | st. | lbs. | | st. | lbs. | |
|----|--------------|----|-----|-------|-----------|---------------|------|-----|-----------------|------|-----|
| 1. | Live weight, | 21 | 3 | or 24 | 2142 | | | | | | |
| | | | | | 72 | | | | | | |
| | | | | | 17-434224 | or, by table, | 17 | 6 | Actual dead wt. | 17 | 6 |
| 2. | .. | 22 | 12 | or 22 | 8751 | | | | | | |
| | | | | | 72 | | | | | | |
| | | | | | 16-470072 | .. | 16 | 6½ | .. | 16 | 10½ |
| 3. | .. | 22 | 0 | or 22 | | | | | | | |
| | | | | | 72 | | | | | | |
| | | | | | 15-84 | .. | 15 | 12 | .. | 16 | 1 |
| 4. | .. | 21 | 6 | or 21 | 4285 | | | | | | |
| | | | | | 71 | | | | | | |
| | | | | | 15-214235 | .. | 15 | 3 | .. | 14 | 4 |
| 5. | .. | 19 | 11 | or 19 | 7857 | | | | | | |
| | | | | | 70 | | | | | | |
| | | | | | 13-849990 | .. | 13 | 12 | .. | 14 | 3 |
| | | | | | | | 78 | 11½ | | 78 | 10½ |

The quantities of tallow severally yielded by these five sheep were as follows, viz.:—

Nos. 1 and 2, 1 st. 4 lbs. each; No. 3, 1 st. 2½ lbs.; No. 4, 1 st. 8 lbs.; and No. 5, 10½ lbs.: showing 1, 2 and 3, very good provers; 4, an extraordinary prover; and 5, but an in-

different prover. The fleeces of all of them were quite ripe.

The following was a two-year-old Leicester wether sheep, in fair condition, killed by Mr. Robert Story, of Newcastle-upon-Tyne, May 21, 1846:

| | | | | | | | | | | |
|--------------|-----|------|------|----------|---------------|------|----|---------------------|------|---|
| | st. | lbs. | st. | | st. | lbs. | | st. | lbs. | |
| Live weight, | 9 | 3 | or 9 | 2142 | | | | | | |
| | | | | 57 | | | | | | |
| | | | | 5-252094 | or, by table, | 5 | 3½ | Actual dead weight, | 5 | 2 |

The following was a ewe, half-bred between Leicester and Cheviot, killed by Mr. William Hawksby, of Newcastle-upon-Tyne, in April, 1846:

| | | | | | | | | | |
|--------------|-----|------|------|----------|---------------|---|----|---------------------|-----|
| | st. | lbs. | | st. | | | | | |
| Live weight, | 6 | 9 | or 6 | 6428 | | | | | |
| | | | | 51 | | | | | |
| | | | | 3-377828 | or, by table, | 3 | 5½ | Actual dead weight, | 3 6 |

The foregoing examples are not selected particularly as a test of the accuracy of the scale of proportions laid down, as many instances can be given for such a purpose quite as close to the actual dead weights as those above; but as the particulars of the live and dead weights of the first five are recorded in the public prints, probably furnished by Mr. Patten, the Duke of Northumberland's agent (vide *Newcastle Journal*, May 16, 1846), they may be referred to; and as both the live and dead weights of the last are registered in the book kept at the public weigh-house, in the butchers' market at Newcastle, it is also an instance on public record. The examples given above will serve to show the application of the scale of proportion to *sheep of extraordinary weight*, to those of a *general character*, and also to *sheep of a very shabby description*. [The (London) Plough.

"EXPERIMENTS IN THE FIELD."—In the published proceedings of an Agricultural Association in England, attention has been drawn to the refuse matters of bleach-works, as well as to other waste materials; and experiments have been suggested for testing their value to the practical farmer. A letter has been received from Mr. Pringle, at Ingram Farm, near Lisburn, in Ireland, describing some interesting and successful experiments of this kind, in which the waste leys of a bleach-work were found very advantageous, in conjunction with farm-yard manure, in promoting the growth of turnips. The subjoined results are deduced from the statement in the letter, as having been obtained from the experiments tried:

| | Bulbs. | Tops. |
|--------------------------|-----------------|--------------------------|
| Dung alone..... | 17 tons 5½ cwt. | 8 tons 14 cwt. per acre. |
| Dung and guano..... | 26 " 18½ " | 8 " 1½ " |
| Dung and waste leys..... | 33 " 12½ " | 7 " 1½ " |

"The interesting difference in the weight of the tops, when the leys were used, appears to be connected with the large quantity of alkaline matter contained in the waste liquor; and, so far as the experiment goes, the liquid seems to influence the growth of the plant more in the bulb than in the leaf—a very important fact, if farther trials should confirm it."

THE NEW-YORK STATE AGRICULTURAL SOCIETY:

ITS NEXT EXHIBITION.

As will be perceived by the following communication from its zealous and estimable President, that the next Annual Exhibition is to take place at *Saratoga Springs*, on the 14th, 15th and 16th of September, 1847. The premiums offered in money and other forms exceed \$3,000; and it is not a little gratifying to see that the rules for the guidance of all competitors for premiums have been drawn up evidently with much and suitable deliberation and care. One requisition only seems to us to be repugnant to every idea of the character that we would hope belongs to the very occupation of a free-born American *husbandman*. We refer to the *requirement of an oath or affirmation* to the truth of statements made in all cases of any consideration, where the award of the premium must depend more or less on the personal veracity of the competitor. It were to be hoped that in such a case the moral sense of the community must be so fixed, so universal, so well understood, that the certainty of universal scorn and detestation would be all-sufficient to deter any man, if any man (of course we do not say gentleman) could be found into whose contemplation the idea of willful deception or fraud could find its way on such an occasion. Any man who should be found guilty of any attempt at deception would, we may presume, be at once stigmatized as a black sheep, and so marked as to become "a fixed figure for the time, for Scorn to point his slow, unmoving finger at," wherever he should show himself.

It would not be easy to find a more convenient or suitable place for this great exhibition of the industry of the State; and even without any express stipulation on the part of the proprietors of the public houses there, the public would have had, we think, in their character, a sufficient guaranty against the disposition, mean as it was mercenary, which has prompted the proprietors of such establishments in some other places to practice the most infamous extortion, to the disgust of all liberal minded strangers and the scandal of the towns that support them. The hotel keepers, *except one*, have pledged themselves to specific charges.

For ourselves, we here bespeak, in time, a room in old "CONGRESS HALL," where for more than a quarter of a century we have found, "in the season of the year," excellent fare, kind attention and genteel, intelligent, safe and quiet company.

For The Farmers' Library.

NEW-YORK STATE AGRICULTURAL SOCIETY.

AGRICULTURAL ROOMS, ALBANY, April 8, 1847.

THE Executive Committee have the satisfaction to announce to the Agriculturists of the State, that our distinguished fellow-citizen, Hon. SILAS WRIGHT, has accepted an invitation tendered to him to deliver the Annual Address on the Fair ground at Saratoga on the 16th of September next.

It will doubtless have been perceived from the published proceedings of the Executive Committee, that they have, in accordance with the recommendation expressed by the Society at the Annual Meeting in January, located the Cattle-Show and Fair at Saratoga Springs, to be held on the 14th, 15th and 16th of September, 1847.

A Delegation of the Committee visited Saratoga, and selected a fine, elevated plat of ground, within a quarter of a mile of Congress Spring, containing an area of fifteen acres or more, which will be inclosed. Spacious buildings will be erected within the inclosure, with ample accommodations for all articles presented for exhibition.

Care will also be taken that arrangements on an extensive scale, appropriate to the occasion, be made for the reception and exhibition of every description of stock, farm implements, articles of domestic manufacture, fruits, flowers, and articles of mechanic skill, &c.

Arrangements will be made with the several railroad companies for the gratuitous transportation of stock, as well as other articles designed for exhibition, so as to arrive a day or two previous to the first day of exhibition.

The two railroads leading to Saratoga will be in readiness to transport, without hindrance or delay, the visitors who may desire to be present on the occasion.

B. P. JOHNSON, Secretary.

GEO. VAIL, President.

FATTENING CATTLE.

A DISSERTATION ON THE PHILOSOPHY OF FATTENING CATTLE. . . . PART I.

NEXT to understanding properly the chemical analysis of soils, the application of proper manures, and the crops which should be grown from the land by proper tillage, there are but few subjects more deserving the attention of the practical agriculturist than a knowledge of the proper connection which exists and should be duly preserved between the members of the animal and vegetable kingdoms. As I observed in my Lectures on the "Philosophy of Agriculture," so may I now repeat, man is an omnivorous animal—he is destined by the Almighty, who has so created his masticatory and digestive organs, that he can live and flourish under a compound diet of animal and vegetable food; we are also told, by Divine authority, that "*man shall not live upon bread alone*;" consequently, as it is necessary that he should have recourse to substances of a different nature to use in combination, so is it equally of paramount importance that he should direct his care, skill, knowledge and attention to the management of cattle, so that they should be able to afford him the greatest possible amount of nutritious food, and at the least possible expense in money to himself, and waste or loss, or both, in the preparation of the same.

It is my intention in the present Lecture to make a few observations on this subject, to show you the wisdom that experience has taught us, and which I have drawn from many sources, the results of the labors of practical men. To some I may have the pleasure of addressing, the theme I shall discuss may be novel; while I doubt not that many who are here present will be able to confirm many of the truths which I shall utter.

The existing link between animals and vegetables forms one of the most beautiful chains in Nature, and one which cannot be dissolved; it is one of the greatest value to the practical farmer, because it so materially affects his operations in the breeding, rearing and feeding his cattle.

In considering this subject philosophically, we must first of all examine what are the substances which enter into the office of nutrition, and ascertain by what means, as far as our limited knowledge extends, nourishment is afforded to the animal. The vegetables upon which not only cattle but ourselves are fed consist of two portions, viz. an organic and an inorganic; and, upon instituting a chemical analysis, we find that the organic is chiefly composed of a considerable quantity of water, much carbonic acid in combination with the salts of ammonia, and nitric acid; the inor-

ganic portion is entirely derived from the soil from which they grow, and the science of Chemistry informs us that it consists almost entirely of the various saline constituents, and earthy particles, which, upon incineration or burning, constitute the ashes of the plants. I refer you to what I stated in my Lectures on the Philosophy of Agriculture, as to the manner in which these particles are absorbed by the plants, and which you will find published in Nos. I. and II. of "THE FLOW," detailed at length; but I may here briefly remark that these substances are taken into the texture of the vegetable by means of the leaves and roots, which, under the chemical action and influence of the light from the sun, are decomposed—the oxygen becoming returned to the atmosphere which originally gave it; while the elements of water, with the carbon, unite to form starch, sugar, gum, or woody fibre, and with the elements of ammonia or nitric acid, constituting albumen, casein, or gluten. Thus, the plant derives its food almost entirely from the inorganic kingdom, while the animal, on the contrary, from its anatomical conformation, can only exist upon organic matter.

During the present century, such great discoveries have been made in the science of Organic Chemistry, particularly by the discoveries of the late Sir Humphry Davy, Dr. Edward Turner, Professor Brande, Drs. Faraday and Gregory, and last, though not the least, that of Baron Justus Liebig, of Giessen—to which may be added the labors of a rising young chemist, Dr. Lyon Playfair—that much valuable knowledge has been imparted to the philosophical and agricultural world, up in the physiology of animal life, and the manner by which the system is nourished and supported.

We now, therefore, can well comprehend why one species of diet is found to possess a greater quantity of nourishment than another—why the inhabitant of the frozen regions of the North, as I have seen in the persons of the Esquimaux and Greenlander, should require great quantities of train-oil with his daily food. And why? His stomach will digest the rancid flesh and blubber from their whales and seals, while the same species would not only be disgusting to us, but actually prove both physically and mentally injurious to the inhabitants of more congenial and warmer climates. We also understand from the same source how it is that we cannot feed animals or exist ourselves upon a diet wholly composed of sugar, starch, gum, or gelatine; and yet, although we cannot live upon any one of these substances, yet when they are all

properly combined, strange as it may appear to some, it is of all these materials, when properly united, that our daily food is composed. The great office of Chemistry, as applied to this department of human knowledge, is to point out the peculiar wants of animal bodies, and how these are duly supplied in the food we and they daily consume. Anatomy informs us that, like the vegetable, an animal body is composed of two portions: the organic particles form a considerable portion of the flesh or softer tissues of the body; and also an inorganic portion, which Professor Berzelius, of Stockholm, Gay Lussac, Vauquelin, Thenard, and Fourcroy, with Dr. Magendie, of Paris, and other experimental chemists, have demonstrated also to constitute a small portion of the softer parts; but it is in the bones, which constitute the skeleton, that they are principally found; and these are directly derived in the *herbivora* (or vegetable-feeding animals) from the vegetable diet upon which they subsist, while the *carnivora* (or flesh-eating tribes) obtain it indirectly from the blood and flesh of the herbivorous animals upon which they prey.

These remarks naturally lead us to a proper consideration of those substances which form chiefly the food of those animals which are bred, reared and supported by the farmer, either for agricultural labor or as food for man, and in many cases for both—strange to say, they are principally herbivorous in their nature. Examine chemically, therefore, any article which they consume—no matter whether it is wheat, beans, peas, cabbage, carrots or turnips—we shall soon find that, besides water, it has gum, sugar, starch, and a considerable quantity of woody fibre, in union with a small portion of a fatty matter; all these constituents, as I observed in my former Lectures, will be found to be composed only of three elements, viz oxygen, carbon and hydrogen, which exist combined in nearly the same proportions. But we likewise find that there are many other substances contained in vegetables which contain nitrogen, and this is in addition to those elements which compose starch, gum, &c., and are known to the chemist by the appellations of gluten, vegetable albumen, and casein. Now if we take a small quantity of fine wheaten flour, and mix it with water into a paste, and well wash it upon a sieve, by pouring a stream of cold water over it while it is kneaded with the hand, all the sugar, starch and gum will pass away through the sieve with the water, and the substance left behind will resemble bird-lime, being of an equally tenacious nature; this is, therefore, the gluten which the wheat contained; and when dried, the water it possessed being evaporated, it resembles horn, being a hard, brittle mass, and if burnt it emits a similar unpleasant effluvia to burnt horn, feathers, or other animal matter. The gluten which is obtained from peas, beans, or the fibrin and vegetable albumen procured from the expressed juices of the carrot, turnip

or cabbage, all possess analogous properties to those found in wheat, with this exception, that they are all soluble in cold water, whereas the gluten which is obtained from wheat is not. If we submit these substances to the test of chemical analysis, we speedily discover them to be all composed of the same constituents, and also that they are likewise identically the same as those composing the flesh and blood of animals generally; but you must please to bear in mind that this remarkable identity does not consist in their containing azote or nitrogen in combination with oxygen, carbon and hydrogen, in the same or nearly the same proportions as in animal flesh and blood, but it extends to the existence of a small quantity of sulphur and phosphorus, which is found to be associated with the muscular flesh forming one of the soft tissues of the animal. Hence we may very properly assert, as a physiological axiom, that the blood and flesh are, by the Great Author of Nature, found actually ready prepared and elaborated in the vegetable. The plant it is which elaborates and duly prepares all the elements of water, carbonic acid, and ammonia, which constituent particles are found to be identically the same as the muscular animal flesh; consequently, the animal has nothing more to do than to apply them to his own use for the purposes of nutrition, secretion, and the vivification of life.

The following Table, adopted by my talented friend, Professor Gyde, of Painswick, will give the reader an idea of the actual identity of composition existing between these substances:

TABLE I.

| Elements. | Gluten
from Flour. | Casein
from Peas. | Ox
Blood. | Ox
Flesh. |
|-----------|-----------------------|----------------------|--------------|--------------|
| Oxygen, | 22.4 | 23.0 | 22.2 | 22.3 |
| Hydrogen | 7.5 | 7.2 | 7.5 | 7.5 |
| Carbon, | 54.2 | 54.1 | 54.3 | 54.1 |
| Nitrogen, | 15.9 | 15.9 | 15.8 | 15.7 |

Every animal body momentarily undergoes some physiological change; every motion, thought and action is of course performed at the expense of some, and many of almost every part of the body; these incessant alterations and action cause the great demand for food, which Nature constantly requires to repair the waste that is continually taking place. You may speedily ascertain the truth of this fact, by noticing its illustration in those animals who have long been kept without food, or had but a scanty supply, or where it did not possess sufficient nutritious properties; and also in those animals who have undergone great exertion and bodily fatigue, when contrasted with those but little fatigued, and whose food was good in quality and sufficient in quantity. The fine horses formerly attached to our well-appointed coaches, before the construction of railroads and the employment of giant steam-power, and which vehicles will ere long only be remembered by being recorded in the pages of history among

the phenomena that have been and are passed away—the fine horses I have named were almost exclusively fed upon oats and beans, which are two of the most nutritious kinds of all species of vegetable food; while, on the other hand, those horses performing but a small amount of laborious work, will supply the natural waste of their bodies from the very small comparative quantity of gluten which is found to be contained in hay or clover, or both.

I have already informed you that the food of classes of animals consists of two kinds of distinct species of matter; viz. the one which possesses a great proportion of azote, or nitrogen, as one of its principal constituents, and which the Table I have referred to tells us is identical with the blood and muscular flesh of the animal; the other portion is destitute of nitrogen, but consists of gum, starch, sugar and woody fibre. Now, every one of these different materials answers two quite distinct but very important purposes in the economy of every animal body. The first, or the nitrogenous constituents, supply the waste which has occurred in the fluids and tissues of the body, and, as Dr. Magendie very properly states, may justly be termed the elements of nutrition; the last, which are the non-nitrogenous portion, act, if I may apply the expression, as fuel for combustion in the lungs, in order to keep up the due supply of animal heat, and under some peculiar circumstances also will contribute to the formation of fat.—These elements may likewise be arranged under two great heads, viz. those which are necessary to the function of nutrition, and those affecting that of respiration.

I respectfully call your attention to the following Table, wherein they are exemplified:

TABLE II.

1. Elements of Nutrition. 2. Elements of Respiration.

| | |
|---------------------------|-------------|
| Gluten. | Gum. |
| Albumen. | Starch. |
| Casein. | Sugar. |
| Flesh, or Muscular Fibre. | Oil or Fat. |
| Blood. | Alcohol. |

The elements of nutrition (No. 1) must of necessity exist in combination with every substance which experience has taught us to be capable of supplying food to the animal; but, ere it can impart the nutritious properties, numerous important mechanical and chemical changes must undergo, ere it can take place. The grand process of digestion must be performed—by which I mean, the manner by which the nutrient particles may be rendered soluble, and not only capable of entering, but even of forming new blood. A brief detail of the manner in which this is performed may not be uninteresting to some of my present auditory. It is accomplished in the following manner: The food, when received into the mouth, is broken down by the teeth, where it becomes mixed with the saliva, which is secreted by the glands that are situated near the angle of the jaw, and beneath

the tongue; when the process of mastication is completed, the morsel is collected into a ball at the base of the tongue, and by the act of deglutition or swallowing it is carried past the pharynx into the œsophagus or gullet, down which it passes into the stomach, where it enters at the cardiac orifice; it remains there for a short time, according to the nature both of the animal and the food it has partaken of, (in man it is supposed to be about two hours.) The chemical and mechanical action that now takes place is technically called, in physiological language, the process of *chymification*; when this is perfected, the orifice at the opposite extremity (denominated the pylorus) becomes dilated, and the chyme passes into the first of the small intestines, anatomically named the *duodenum*, where it becomes mixed with the bile from the liver, and the fluid from the *pancreas* or sweat-bread. This being accomplished, the process of *chylification* now commences—a series of small, minute vessels, named lacteals, whose mouths open on the mucous (or villous) coat of the bowel or intestine, which absorbs the nutritious portion of the food, (which resembles milk in appearance, hence it is named *chyle*.) This fluid, being conducted by numerous branches, passes into one great reservoir, called the *thoracic duct*, which ends in a large vein near the heart (the left subclavian), and there it is mixed with the blood; but being loaded with carbon, which is inimical to the due preservation of animal life, the blood passes from the heart to the lungs, where it becomes oxygenized, and fit for all the purposes of the animal economy. The non-nutritious portion, from which the chyle has been extracted, passes through the last of the small intestines (the *jejunum*) into the whole course of the larger part of the alimentary canal—viz. the *cæcum*, *colon* and *rectum*, and from the last they are finally ejected from the body—ultimately again to reënter it in another form, in consequence of its forming manure, and therefore affording food for plants in the manner detailed in my former Lectures.

But independent of the simple fact that the salivary fluid, when commixed with the food, renders the digestion of the aliment far more easy, yet Baron Liebig imagines that it possesses the peculiar offices of inclosing and combining air, in the form of froth; the oxygen which it contains enters into union with the constituents of the food, while the nitrogen is again evolved through the medium of the lungs and skin; this philosopher is likewise of opinion that, in many of the herbivorous quadrupeds, their rumination (as the oxen and sheep, for example) has for one of its principal objects a complete renewal with the repeated introduction of pure oxygen into the animal's stomach; and that, unless this takes place, the function of rumination cannot be duly perfected in the stomach. I have given you a brief outline of the manner in which digestion is accomplished, but in doing so I omitted to observe that attached to the mu-

cous or villous coat of the stomach are a series of minute glands, which secrete what is denominated the *gastric juice* or *fluid*, and which, among other matters, contains a quantity of pure *mucus*, in combination with a small quantity of *free hydrochloric* or *muratic acid* (called in common language *spirits of salts*), with a peculiar principle known to chemists under the appellation of *pepsin*, and which has been affirmed by Dr. Sylvester, of Clapham, to be in itself a most active and virulent poison, but whose noxious properties are chemically neutralized in the stomach and intestines during the function of digestion.

I have stated that *hydrochloric acid* is always present in the stomach, and particularly so during the digestive process: for the discovery of this curious but important chemical fact, we are indebted equally to M. Tiedmann Gmelin (of Germany) and Dr. Prout, of London. This acid may be artificially obtained by the decomposition of chloride of sodium, or *common table salt* (which is only a combination of pure muriatic acid and soda); the acid is of great service in promoting the function of digestion in the stomach while the soda, as an alkali, copiously enters into the formation of bile. Thus it is that a certain proportion of salt is necessary to digestion in every species of animals, at least as far as our knowledge extends in the classes of quadrupeds and birds; and, although Chemistry tells us that it is an essential ingredient in the burnt ashes of all vegetables, yet we very rarely find it existing in a sufficient quantity to form a regular supply of either the acid or soda which is required for the due performance of the function of healthy digestion; and, therefore, not only should we ourselves partake of a certain quantity daily with our own food, but should place some within the reach of both birds and cattle under our management in the farms we are connected with. Nature is the philosopher's best monitor, and the scientific farmer cannot do better than obey her axioms. We find that all classes of animals have, if I may use the expression, an instinctive love for salt, and seek for it as for a portion of their diurnal food. It is well known that the pigeon tribe of birds, if they cannot obtain it elsewhere, will even have recourse to the mortar which cements the bricks of houses together; they have been frequently known to fly to the sea-coast in order to procure it; and pigeon-fanciers who are not so honest as to mind *borrowing* their neighbors' birds, will allure them by means of what is known as a *salt cake*, placed in or near the dove-cote, wherein muriate of soda forms an essential ingredient; this nefarious practice is now forbidden, very properly, by an act of Parliament, which awards a punishment of seven years' transportation upon conviction; it however confirms the important physiological fact I have just noticed.

In the ruminating tribe of the class *Mammalia*, as the ox and the sheep, the important process of digestion differs but little from

that which I have stated, and whose stomachs are of the simplest construction, being little else than a mere membranous bag; but in the *Ruminantia*, we find their stomachs considerably more complicated, in order that they may be enabled to extract the due proportion of nourishment which they require from the food which they eat; as in the case of grass, by way of example, which we find by chemical investigation contains but very little nourishment in proportion to the bulk. Let us now philosophize for a moment, and see the manner in which the ox and those of his class perform the functions of mastication and digestion. In these creatures, the grass is cropped from the surface of the earth by means of the fore-teeth, and after being but very slightly masticated, is swallowed; this process continues until the first stomach is filled,* when the animal lies down apparently well and perfectly contented; but it is now that the curious process of rumination commences. In the first stomach, the food is mixed with a secreted fluid not dissimilar to the saliva, and in a kind of semi-pulpy mass it is returned into the mouth, in small detached portions, where perfect mastication takes place, and during this process the animal is in a recumbent position; after the second and perfect mastication is completed, the food passes into the second stomach, denominated by comparative anatomists *omasum*; from this it passes into the third stomach, the *abomasum*; in these last two, it undergoes very important changes, and whence it passes into the fourth or really true stomach. It is in this last portion of the curious but complicated species of apparatus, that the function of digestion is ultimately and perfectly performed; and the last processes of extracting the nutriment from the food are exactly similar to that which I have described as occurring in man and those animals having simple membranous stomachs. The vital fluid of all animals is commonly denominated the blood, in which, as Holy Writ truly observes, "*is life*;" this fluid is either formed from vegetables, as in the *Herbivora*, or from flesh, as in the *Carnivora*; yet in both tribes of animals the composition and essential constituents are the same, both in their physical effects upon the system, and as portrayed by chemical analysis. We find it circulating throughout not only the principal organs in the living animal, but by means of vessels as fine as the human hair: so extremely delicate are they that they will not admit the thicker coloring particles of the blood itself; yet the properties which the blood possesses are most surprising: it replenishes the fluids and solids which are diminished by the waste, wear and tear of the body; it places osseous or bony matter in the skeleton for its growth and support;

* We should here observe that the Lecturer exhibited drawings of the stomach, as found in both tribes of animals.

forms fleshy fibres for soft muscular tissue, by which the motions of the body are performed; and from the blood are all the different bodily secretions which are necessary for the healthy existence of the animal secreted and performed; the blood supplies carbon to the lungs for keeping up the animal heat, with fat and oily fluids deposited in the softer tissues as well as in the very substances of the bones themselves, as a store from which Nature can extract a due supply when necessity compels her; lastly, the blood is the true moving power by which the whole animal machine is put into motion, just as steam is to the steam-engine, and coals as fuel to the fire.

As far as I have proceeded I have only spoken of that part of the food from which animal flesh is naturally formed; *i. e.*, the gluten extracted from the vegetable, the albumen, and the casein: my self-imposed task, however, is not yet complete. I have now to take into consideration the offices which are fulfilled by the sugar, starch, gum, oil or fat, which we find, by examination, constitute so large a proportion of the food of man, and the principal of the lower orders of animals. Now, we find from observation, that every animal has a temperature above that of the surrounding atmosphere; and physiologists have denominated it the animal heat, which, in those animals domesticated by man, are found to be, on an average, about 100° of Fahrenheit's thermometer—in man it is about 97°, and we find that it continues much the same under every kind of circumstance, whether we live beneath a tropical sun, a more temperate region, or the frozen climes of the North.

The animal heat originates in the body; it is created by the chemical combination, or, if I may employ the term, the combustion of the elements which enter into the formation of starch, with the other non-nitrogenous constituent particles of the food, united with the oxygen of the air, which is received into the lungs during the function of inspiration; and likewise by a portion that is absorbed through the skin.

Upon examining the atmospheric air which we breathe, we find, upon submitting it to a chemical analysis, that it is composed of twenty-one parts of oxygen and seventy-nine parts of nitrogen, with so small a quantity of carbonic acid gas that its amount cannot be calculated in a given quantity of air; yet of course an immense proportion must exist, for it is supposed that the atmosphere extends forty-five miles at least in height, and presses at the ratio of 15 lbs. upon every square inch: this was discovered by Torricelli and Galileo in the 17th century. However, when the air we have inspired has been expelled from the body, we find that it has undergone but little if any change; the oxygen, however, has disappeared, and been replaced by an equable quantity of carbonic acid gas, with a small quantity of aqueous vapor: the

proportion of animal heat which attends this chemical change, is consequent upon the amount of carbon and hydrogen which is consumed. The heat which is thus produced is occasioned by exactly the same chemical action as that which causes the combustion of wood in a stove, or the fat of a lamp or candle, and the products of which are exactly the same: the carbon and the hydrogen of the food combine with the oxygen that is supplied by the atmosphere, and heat is generated in the body in proportion to the quantity which is consumed. In the stove or lamp the same changes take place, the fuel being composed of similar elements entering into the composition of the food; and the results of the combustion are precisely the same, the combination being less energetic in the body than in the stove or lamp.

Now, how is it in man? In a full-grown adult, if we take the weight of the carbon which is disengaged in the excretions, from the weight of the carbon contained in the food that is consumed during the twenty-four hours, we shall soon find that the remainder will amount to somewhere about fourteen ounces, and this is assimilated with the component parts of the body; the weight of which, however, does not increase, for it is a well known philosophical axiom, that fourteen ounces of carbon will require thirty-seven ounces of oxygen* for its transformation into carbonic acid, which passes off from the lungs and skin. Thus, in this simple manner, we can easily comprehend how it is that the enormous quantity of oxygen which is introduced into the animal body by the progress of inspiration, and the great proportion of carbon which is derived from the food consumed, are removed from the body: and likewise, how it is that the food required for supporting the animal in its normal condition is in exact proportion to the quantity of oxygen that is absorbed. Now, we find that a horse consumes daily, in his food, upon an average, eighty-nine ounces of pure carbon, and a cow seventy ounces; the former requires 212½ ounces, the latter 186½ ounces of oxygen, in order to transform the consumed carbon into carbonic acid. I have already stated that, in addition to the constituents which I have named, the vegetable is found upon chemical analysis to contain a small quantity of fatty matter in addition to the earthy and saline substances of which it is composed. The question is now to be answered, What are the purposes which they answer in the animal economy? Every animal that is in a state of sound health has a layer of fat, which is situated between the skin and the muscles, and likewise between the muscles themselves, by which means they have great freedom of motion. Fat is also deposited in the body of the animal, particularly in the neighborhood of the bowels, also attached to a portion of them, and enveloping the kidneys, (where it

* One ounce of oxygen equals 14165 cubic inches.

is vulgarly called by butchers the suet). In the *Carnivora* or flesh-eating animals, the fat which is contained in the food they eat, is consumed in the lungs for the purpose of preserving the proper quantity of animal heat, and consequently, in these creatures, we but very rarely find the body of the carnivorous animal to contain much fat. M. Darwin, in his *Journal of Researches into the Natural History of the Countries visited during the voyage of the Beagle*, informs us that the Gauchos, or simple countrymen in the Pampas, South America, lived for months together upon flesh, but he observed that they ate large quantities of fat; and Dr. Richardson, in speaking of these people, has also remarked "that, when they have fed for a long time solely upon lean animal food, the desire for fat becomes so insatiable that they can consume a large quantity of unmixed and even oily fat, without nausea." This instinctive desire for fat in man and animals living on flesh arises from the imperative demands which are daily made upon the body for carbon to keep up the proper amount of animal

heat, and which is contained in the fat that is consumed as an article of diet.

Thus far in the omnivorous and carnivorous animals; but in the herbivorous creatures it is widely different. The supply to the lungs is derived from the starch, sugar and gum in the vegetable, while the fat which exists in the food is in a great measure laid up as fat in the animal body; therefore it is that we find the bodies of the herbivorous quadrupeds generally much fatter than the *Carnivora*. But if the supply of the starch in the food is inadequate to the demands of respiration, then the elements of the fat become consumed in the lungs, exactly as it is in the carnivorous animal; the sugar, gum, and starch become speedily transformed into aqueous vapor and carbonic acid in the animal system: these are the first consumed; and, if this supply proves to be inadequate for the purpose required, then the fat, next the fat of the animal body, and finally the tissues themselves, are placed under contribution, the animal becoming thin, feeble, and emaciated, and ultimately dying from starvation.

[The (London) Plow.]

CARROTS *versus* OATS.—We have had twenty communications from various sources, all of which concur in saying that a peck of carrots will, with the same quantity of hay, keep working-horses in as good condition, and many say better, than a peck of oats and a like quantity of hay; or that a peck of carrots and a peck of oats are equal to half a bushel of oats. 60 bushels of oats and 900 of carrots per acre are large crops.

| | |
|---|----------|
| Say to raise carrots you plow your land once oftener than for oats, at a high allowance for man and team | \$2 50 |
| Say it takes 12 days' labor to hoe the acre three times, and 4 days' labor to dry the crop—16 days at 75 cents per day | 12 00 |
| Say additional manure for carrots, which, however, leaves the land the richer | 10 50 |
| Total | \$25 00 |
| Say, then, you raise only 500 bushels of carrots per acre, at 35 cents per bushel | \$175 |
| Deduct extra cost of cultivation | 25 |
| Produce of one acre of carrots | \$150 00 |
| Say you raise 40 bushels of oats per acre, place the seed of the two as equal, and that the straw of the oats pays for reaping and threshing, and you have 35 cents per bushel .. | 14 00 |
| | \$136 00 |

clear gain, if you feed your carrots to your horses or cows.

Then strike off half again, and reduce your crop of carrots to 250 bushels, and still you have \$68 against \$14.

But what's the use of demonstration to men who never go beyond having "*a great mind to try it!*"

But another view: Can a greater disparity be thought of than the difference in the labor employed between getting a crop of oats and a crop of carrots?—the one the least, the other the most laborious, almost, in the whole circle of agricultural operations. So there are always "two sides to a story!"

TO FATTEN POULTRY.—Set rice over the fire, with skimmed milk; let it boil till the rice is quite swelled out, and then add a spoonful of sugar. Feed the poultry thrice a day in common pans, which must be kept clean to prevent sourness. Give them the milk of rice to drink. The rice gives a very delicate whiteness to the flesh. Animal food pounded very small is a useful mixture; and charcoal broken in small pieces increases the appetite and promotes digestion.

ROAD MAKING.

WE have been permitted to make some extracts, in advance of publication, from "*A Manual of Road Making*," by Professor GILLESPIE of Union College, which is to be published early in May by A. S. Barnes & Co. of this City.

From the "Introduction" we take some exemplifications of the great differences in economy, &c., between a good road and a bad one, as affecting the profits of Agriculture, and the gain to farmers in their improvement.

One important difference lies in the *grades* or longitudinal slopes of a road. Suppose that a road rises a hundred feet in the distance of two thousand feet. Its ascending slope is then one in twenty, and (as will be hereafter proven) one-twentieth of the whole load drawn over it in one direction, must be actually *lifted up* this entire height of one hundred feet. But upon such a slope a horse can draw only *one-half* as much as he can upon a level road, and two horses will be needed upon such a road to do the usual work of one. If the road be intrusted to the care of a skillful engineer, and be made level by going round hills instead of over them, or in any other way, there will be a saving of one-half of the former expense of carriage on it.

Another great difference in roads lies in the nature of their *surfaces*; one being hard and smooth, and another soft and uneven. On a well-made road of broken stone, a horse can draw *three times* as much as he can upon a gravel road. By making, then, such a road as the former (according to the instructions in Chapter IV.) in the place of the latter, the expenses of transportation will be reduced to one-third of their former amount, so that two-thirds will be completely saved, and two out of three of all the horses formerly employed can then be dispensed with.* If such an improvement can be made for a sum of money the interest of which will be less than the total amount of the annual saving of labor, it will be true economy to make it, however great the original outlay; for the decision of all such questions depends on considerations of comparative profit. This part of the subject will be more minutely examined at the end of Chapter I., in considering "*What roads ought to be as to their cost.*"

The profits of such improvements are not confined to the proprietors of a road, (whether towns or companies remunerated for these expenditures by tolls,) but are shared by all who avail themselves of the increased facilities; consumers and producers, as well as road-owners. If wheat be worth in a city a dollar per bushel, and if it cost 25 cents to transport it

thither from a certain farming district, it will there necessarily command only 75 cents. If, now, by improved roads, the cost of carriage is reduced to 10 cents, the surplus 15 cents on each bushel is so much absolute gain to the community, balanced only by the cost of improving the road. Supposing that a toll of 5 cents will pay a fair dividend on this, there remain 10 cents per bushel to be divided between the producer and the consumer, enabling the former to sell his wheat at a higher price than before, while at the same time the latter obtains it at a less cost.

Among the most remarkable consequences of the improvement of roads, is the rapidly increasing proportion in which their benefits extend and radiate in every direction, as impartially and benignantly as the similarly-diverging rays of the sun. Around every town or market place we may conceive a number of concentric circles to be drawn, enclosing areas from any part of which certain kinds of produce may be profitably taken to the town, while from any point beyond each circumference, the expense of the carriage of the particular article would exceed its value. Thus the inner circle, at the center of which is the town, may show the limit in every direction from beyond which perishable vegetables, or articles very bulky or heavy in proportion to their value, cannot be profitably brought to market; the next larger circle may show the limit of fruits; and so on. If, now, the roads are improved in any way, so as in any degree to lessen the expense of carriage, the radius of each circle is correspondingly increased, and the area of each is enlarged as the *square* of this ratio of increase. Thus, if the improvement enables a horse to draw twice as much or to travel twice as fast as he did before, each of the limiting circles is expanded outward to twice its former radius, and embraces *four* times its former area. If the rate of improvement be threefold, the increase of area is *ninefold*; and so on. All the produce, industry and wealth, which by these improvements finds, for the first time, a market, is, as it were, a new creation.

The greater importance to farmers of common roads—the people's highways—than the most perfect railroads, is shown in our next extract.

The distinguishing characteristic of a modern railroad, as compared with a "tram-road," and that to which its peculiar power is chiefly due,

is the projecting flanges of the wheels of its carriages, by which they are retained upon the rails. But this peculiarity, in an equal degree,

* In the absence of such an improvement, when the Spanish Government required a supply of grain to be transferred from Old Castle to Madrid, 30,000 horses and mules were necessary for the transportation of 480 tons of wheat. Upon a broken stone road of the best sort, *one hundredth* of that number could easily have done the work.

lessens its advantages to the agricultural population; since the vehicles which are adapted to travel on a railroad cannot be used on the common roads leading to them, nor in the ordinary labors of the farm; while on all other improved roads the same wagons, horses and men employed at one season in cultivating the ground, can also be profitably employed, in their otherwise idle moments, in conveying the produce to a market. For these reasons, even if a railroad came to every man's door, he could more economically use a good common road; but

The great fault in laying out our common roads, according to Prof. Gillespie, is our passion for straightness, to the forgetfulness of every other requisite. He maintains that

Straightness should always be sacrificed to obtain a level, or to make the road less steep. This is one of the most important principles of road making, and it is the one most often violated.

A straight road over an uneven and hilly country may, at first view, when merely seen on the map, be pronounced to be a *bad* road; for the straightness must have been obtained either by submitting to steep slopes in ascending the hills and descending into the valleys, or these natural obstacles must have been overcome by incurring a great and unnecessary expense in making deep cuttings and fillings.

A good road should wind around these hills, instead of running over them, and this it may often do without at all increasing its length. For if a hemisphere (such as half a bullet) be placed so as to rest upon its plain base, the halves of great circles which join two opposite points of this base are all equal, whether they pass horizontally or vertically. Or let an egg be laid upon a table, and it will be seen that if a level line be traced upon it from one end to the other, it will be no longer than the line traced between the same points, but passing over the top. Precisely so may the curving road around a hill be often no longer than the straight one over it; for the latter road is straight only with reference to the vertical plane which passes through it, and is curved with reference to a horizontal plane; while the former level road, though curved as to the vertical plane, is straight as to a horizontal one. Both lines thus curve, and we call the latter one straight in preference, only because its vertical curvature is less apparent to our eyes.

The difference in length between a straight road and one which is slightly curved is very small. If a road between two places ten miles apart were made to curve so that the eye could nowhere see farther than a quarter of a mile of it at once, its length would exceed that of a perfectly straight road between the same points by only about one hundred and fifty yards.*

But even if the level and curved road were very much longer than the straight and steep one, it would almost always be better to adopt it; for on it a horse could safely and rapidly draw his full load, while on the other he could carry only part of his load up the hill, and must diminish his speed in descending it. As a general rule, the horizontal length of a road may be advantageously increased, to avoid an ascent, by at least twenty times the perpendicular height which is to be thus saved: that is, to

since, on the contrary, the expense of the construction of railroads must always restrict them to important lines of communication (where, indeed, their value can scarcely be estimated too highly) in every other situation, the greatest good of the greatest number, and the most universal benefits with the fewest accompanying evils will be most effectually secured, by improving (in accordance with the principles to be presently set forth) the people's highways—the common roads of the country.

escape a hill a hundred feet high, it would be proper for the road to make such a circuit as would increase its length two thousand feet. The mathematical axiom that "a straight line is the shortest distance between two points," is thus seen to be practically untrue in road making, and less appropriate than the paradoxical proverb that "The longest way round is the shortest way home."

The gently-curving road, besides its substantial advantages, is also much more pleasant to the traveler upon it; for he is not fatigued by the tedious prospect of a long straight stretch of road to be traversed, and is met at each curve by a constantly varied view.

It cannot be too strongly impressed upon a road-maker, that straightness is *not* the highest characteristic of a good road. As says Coleridge:

*"Straight forward goes
The lightning's flash, and straight the fearful path
Of the cannon-ball."*

But in striking contrast he adds:

*"The road the human being travels,
That on which blessing comes and goes, doth follow
The river's course, the valley's playful windings,
Curves round the cornfield and the hills of vines."*†

The passion for straightness is the great fault in the location of most roads in this country, which too often remind us how

*"The King of France, with forty thousand men,
Marched up a hill, and then—marched down again,"* so generally do they clamber over hills which they could so much more easily have gone around; as if their makers, like Marshal Wade, had "formed the heroic determination of pursuing straight lines, and of defying nature and wheel-carriages both, at one valiant effort of courage and of science."

One reason of this is that the houses of the first settlers were usually placed on hill-tops, (to escape the poisonous miasmata of the undrained swamps, and to detect the approach of the hostile savages,) and that the first roads necessarily ran from house to house. Our error consists in continuing to follow these primitive roads with our great thoroughfares. These original paths were also traversed only by men, and therefore very properly followed the shortest though steepest route. Tracks for pack-horses came next, and a considerable degree of steepness is admissible in them also. Wheeled carriages were finally introduced and brought into use upon the same tracks, though too steep for true economy of labor with them—the standard of slope being very different for foot, horse, and

* Sganzin, p. 89.

† This proportion depends on the degree of friction assumed, a subject to be investigated in a following section.

‡ The Piccolomini, i. 4

carriage roads. Before sufficient attention was paid to the subject, the lands on either side of the road had been fenced off and appropriated by individuals, and thus the random tracks became the legal highways.

The evil is now perpetuated by the unwillingness of farmers to allow a road to run through

their farms in a winding line. They attach more importance to the squareness of their fields than to the improvement of the lines of their roads—not being aware how much more labor is wasted by them in traveling over their steep roads than there would be in cultivating an awkward corner of a field."

The evils of ascents and descents having been explained, the question of the advantages of undulating roads is thus disposed of:

UNDULATING ROADS.—There is a popular theory that a gently undulating road is less fatiguing to horses than one which is perfectly level. It is said that the alternations of ascent, descent and levels call into play different muscles, allowing some to rest while the others are exerted, and thus relieving each in turn.

Plausible as this speculation appears at first glance, it will be found on examination to be untrue, both mechanically and physiologically; for, considering it in the former point of view, it is apparent that new ascents are formed which offer resistances not compensated by the descents; and in the latter, we find that it is contradicted by the structure of the horse. The question was submitted by Mr. Stevenson to

Dr. John Barclay of Edinburgh, ("no less eminent for his knowledge than successful as a teacher of the science of Comparative Anatomy.") and he made the following reply: "My acquaintance with the muscles by no means enables me to explain how a horse should be more fatigued by traveling on a road uniformly level, than by traveling over a like space upon one that crosses highs and hollows; but it is demonstrably a *false idea* that muscles can alternately rest and come into motion in cases of this kind. . . . Much is to be ascribed to prejudice originating with the man continually in quest of variety, rather than with the horse, who, consulting only his own ease, seems quite unconscious of Hogarth's Line of Beauty."

The best width and shape of the road-bed are next examined; the resistance of different surfaces established, and the profits of various improvements investigated. In the directions for "Laying out Roads," are explained methods of performing all the necessary measurements of distances, directions and highs, without the use of any instruments but such as any mechanic can make and any farmer use. The details of construction are very fully given, and copious instructions are laid down for making Macadam roads on their true principles, the favorite Plank roads, &c. &c. A popular exposition of Railroads follows. The concluding Chapter is devoted to the "Management of Town Roads." It points out the great practical evils of the present system of "Road-tax," and suggests an improved system, to which we will return after the publication of the book.

ESTIMATED CROP OF THE UNITED STATES....[From Reports of Commissioners of Patents.]

| WHEAT. | | CORN. | | RYE. | | BARLEY. | | OATS. | |
|----------|-------------|----------|-------------|----------|------------|----------|-----------|----------|-------------|
| Years. | Bushels. | Years. | Bushels. | Years. | Bushels. | Years. | Bushels. | Years. | Bushels. |
| 1842.... | 102,317,340 | 1842.... | 441,829,246 | 1842.... | 22,762,952 | 1842.... | 3,874,622 | 1842.... | 150,883,617 |
| 1843.... | 100,310,856 | 1843.... | 494,618,305 | 1843.... | 24,289,281 | 1843.... | 3,230,721 | 1843.... | 145,929,666 |
| 1844.... | 95,607,000 | 1844.... | 424,953,000 | 1844.... | 26,450,000 | 1844.... | 3,627,000 | 1844.... | 172,247,000 |
| 1845.... | 106,548,000 | 1845.... | 417,899,000 | 1845.... | 27,175,000 | 1845.... | 5,160,600 | 1845.... | 163,208,000 |
| 1846.... | 117,202,800 | 1846.... | 459,666,900 | 1846.... | 59,892,500 | 1846.... | 5,676,600 | 1846.... | 172,528,800 |

EXPORT OF BREAD STUFFS from the United States to Great Britain and Ireland, from September 1, 1846, to March 27, 1847

| PORTS. | FLOUR
Bbls. | CORN MEAL
Bbls. | WHEAT.
Bushels. | CORN.
Bushels. | RYE.
Bushels. | OATS.
Bushels. | BARLEY.
Bushels. |
|----------------------------|----------------|--------------------|--------------------|-------------------|------------------|-------------------|---------------------|
| From New-York | 675,146 | 149,861 | 997,718 | 2,939,416 | 2,685 | 124,069 | 130,071 |
| .. Philadelphia..... | 104,937 | 62,581 | 195,439 | 397,914 | | | |
| .. Baltimore..... | 161,771 | 23,095 | 33,770 | 818,445 | | 20,000 | |
| .. Norfolk..... | 4,581 | 5,149 | | 564,500 | | | |
| .. N. Orleans (to 20th) .. | 257,890 | | 46,555 | 1,687,459 | | | |
| .. Boston..... | 53,551 | 8,196 | | 463,906 | | | |
| .. Other ports..... | 1,000 | | 500 | 60,000 | | | |
| Total..... | 1,258,876 | 248,852 | 1,273,882 | 6,931,640 | 2,685 | 144,069 | 130,071 |

The latter Table, though not at all obtained from official sources, is believed to be very nearly correct.

LETTER VI.

PROFITS OF SHEEP HUSBANDRY IN THE SOUTHERN STATES—2. AS THE BASIS OF AMELIORATION IN NATURALLY STERILE AND WORN-OUT SOILS.

Feasibility of rendering the naturally sterile and worn-out Soils of the South productive... Means must be ample and cheap... Ordinary Animal Manures from Stables, &c., not attainable in sufficient quantity—too expensive if transported far by land carriage... Animal Manures of Commerce still more out of the question... Gypsum—not sufficient of itself... Wood Ashes—Leached Ashes—their great value, but limited quantity... Lime (marl)... Swamp Mud—inexhaustible quantity of each... Valuable Effects of Lime on Soils... Otherwise when there is a deficiency of Organic Matter... Opinion of Johnston, Brown, Lord Kaimes, Anderson, Morton, Thaër, Petzholdt, Chaptal... Southern Tertiary and Granite Soils destitute of Organic Matter... Expensiveness of Marl—not very permanent in its effects... The best Swamp Mud worth more per load... This, too, an expensive manure... Both too costly for extensive ameliorations... Is there, then, any resort?—There is—it is to be found in a Mixed System of Green and Animal Manuring, the latter made attainable by Sheep Husbandry... Experience and Testimony of various English Farmers under analogous circumstances... Reasons why Sheep are preferred to Horned Cattle for this purpose... Considered more profitable in England, and by some in the United States, independent of Fleece... Singular Hallucination of Col Taylor on this subject... Sheep preferred as Improvers of Poor Lands in the Northern and Eastern States, but the end sought by different means from those employed in England... The English System—Reasons why it is inapplicable in the United States... System in the Northern and Eastern American States... Proper System in the Southern States, on Lands now partly Grassed, and on Naked Soils... Green Manuring—how accomplished—Proper Plants for the purpose—Practical Rules—Expensiveness... Should the Pasture Lands of the South be exclusively devoted to Sheep Grazing?—Should not... Home Demand should be supplied by Home Production, in the Staples furnished by all the Domestic Animals—Reasons therefor... As a surplus or exporting Animal Staple, Sheep furnish the one in which the South can best compete with other Producers.

Dear Sir : Let us now pass to the second point in reference to which we are to consider the profits of sheep husbandry in the Southern States, viz.: the practicability and comparative economy of making it the basis of an effectual amelioration in soils naturally sterile, or those which have been rendered so by excessive and injudicious cultivation.

The first of these classes of soils is confined, mainly, to the tide-water zone. The second is found both in this and the hilly zone, and, I need not say, in immense quantities.

How can these soils be profitably ameliorated? It is certain that this can only be done by the introduction into them of substances fitted to become the food of plants—or which, by chemical combinations or changes, prepare other substances to become such food. On soils naturally too sterile to sustain useful vegetation, the quantity of fertilizing matter introduced must be comparatively large. Hence it must be cheap, or its cost will more than overbalance its advantages. There are various manures which separately, or in conjunction, would convert the worst acre of barren sand between Richmond and Raleigh, or, if you please, on the Desert of Sahara, into a fertile garden, provided it could have timely rains and be protected from the burying sands. But it is utterly useless to argue the *feasibility* of this means or that, without at the same time examining its *economy*.

The direct and profuse application of animal manures, for example, would probably effectually ameliorate any of these soils. But where are these manures to be obtained, in a region where the first necessary condition for their production, *i. e.* the vegetation necessary to support domestic animals, is wanting? The quantity accumulating in the cities and villages of a comparatively sparsely populated region—in a climate where the preservation of putrefying substances would be incompatible with

health, would be inconsiderable. And whether more or less, it would not pay the cost of transportation to any considerable distance by land carriage. Guano, poudrette, bone-dust, and all the expensive manures of commerce, are still more out of the question. Gypsum, on account of the smallness of the quantity requisite, is a cheap manure, and, reasoning from analogy, should be a valuable one, under proper circumstances, at least on the granitic soils of the South.* Mr. Ruffin states that it produces little effect in the Tertiary sands.† It is considered by practical men to be, at the best, rather an *aider* of organic manure than a *substitute* for it, and when repeatedly applied without any other fertilizing substance, it ceases to produce any visible effect. On an exhausted soil, the chemical constitution of gypsum shows that it could not replace *all* the substances abstracted by the plants; and on one naturally sterile, there is small probability that it would happen to supply the only deficiency necessary to the production of vegetation. Wood ashes constitute a most valuable manure on probably every class of soils, and, unlike lime, gypsum, soda, etc., which afford only a limited number of those substances which constitute the necessary food of plants, they afford in a greater proportion than any other manure the inorganic substances which are taken up and assimilated by plants.‡ They are used with the most beneficial effect on the granitic soils of New-England, the calcareous and aluminous ones of Middle New York, the silicious ones of the southern or grazing region, and on the Tertiary sands of Long Island. On the latter, of the same geological formation with your tide-water zone—in fact but a continuation of it—even the leached or washed ashes bring a shilling per bushel (the same that is paid for the unwashed ashes by the soap and manufacturer of pearl or pot ashes) for agricultural purposes.|| But the supply cannot be made sufficiently large for extensive agricultural ameliorations, without a destruction of the forests, which would inflict a grievous and utterly inexcusable wrong on posterity.

The Southern Atlantic and Gulf States possess two natural and inexhaustible deposits of fertilizing matter, which, it is supposed by many, would be fully adequate to the general "reclamation" § of their barren and exhausted evils. The first of these is the marl, which underlies large portions of the low country of Virginia and South Carolina, and probably the

* I refer here to the successful example of its use on the granitic soils of New-England. I have particularly specified this class of soils because your barren ones are limited to them and to the Tertiary. Gypsum is used at the North on nearly every class of soils with advantage—calcareous, aluminous, silicious and all intermediate varieties. It will be found very valuable, I have no doubt, on your mountain lands, particularly in localities where the clovers flourish.

† Ruffin's Agricultural Survey of South Carolina, 1843.

‡ To show the value of ashes as the food of plants, and at the same time the difference between those made from different woods, I append the following analyses of those of two well-known southern trees. That of oak ashes is by Sprengel, that of pitch-pine ashes by Berthier:

| Constituents. | Oak. | Pitch-Pine. | Constituents. | Oak. | Pitch-Pine. |
|--------------------------|-------|-------------|-----------------------|-------|-------------|
| Silica | 29.95 | 7.50 | Potash | 16.20 | 14.10 |
| Alumina | | | Soda | 6.73 | 20.75 |
| Oxide of Iron | 8.14 | 11.10 | Sulphuric Acid | 3.36 | 3.45 |
| Oxide of Manganese | | 2.75 | Phosphoric Acid | 1.92 | 0.90 |
| Lime | 17.38 | 13.60 | Chlorine | 2.41 | |
| Magnesia | 1.44 | 4.35 | Carbonic Acid | 15.47 | 17.50 |

|| This fact I consider an important hint to the planters of the tide-water zone, and it is to be hoped that it is one which will not be thrown away. Leached ashes are valuable also on every other class of lands. The southern portion of my farm (lying on Chemung rocks) is silicious. The northern part is covered with "northern drift," and is therefore calcareous. I use from 3,500 to 4,000 bushels of leached ashes per annum, without any discrimination as regards the soil, and on almost every variety of crops, and invariably with marked advantage. Doct. Emmons, our State Geologist, having in charge the volumes on Agriculture, stated to me that he considered these leached ashes far more valuable by bulk than a rich marl (accessible to me) containing 90 per cent of carbonate of lime.

§ This word ("reclaim") has a provincial signification throughout the North, when applied to land. It means "to render productive." Unlike the words "fertilize," "enrich," etc., it implies *degre*, as well as *manner*. To "reclaim" land, therefore, is to fertilize or enrich it to such a degree that it will yield fair crops. I shall use the word both as a verb and a noun, to avoid the circumlocution otherwise necessary to express this idea.

whole Tertiary formation, or at least that portion of it extending through the Atlantic States. The second is the swamp mud, which, rich with the alluvial deposition of ages, fills nearly every depression of the surface capable of retaining water, in the whole tide-water zone.

Mr. Ruffin recommends the former as the best and most attainable fertilizer on both of the classes of soils under examination. He seems to think it adequate, of itself, to their full and permanent amelioration. I do not desire a word which I shall say to bear, or even seem to bear, a controversial tone toward the views of this ardent and enlightened friend of Southern Agriculture. In expressing my dissent from them, my limits and the occasion only permit me to allude to a few well-settled principles and facts on which I have based my opinions. Lime acts mechanically and chemically on soils. It stiffens loose and opens clayey ones. It is, to a certain extent, one of the necessary constituents of plants; it neutralizes acid substances in the soil; it forms compounds, and promotes the dissolution of existing ones, to prepare suitable food for plants; and sometimes produces certain other minor beneficial effects. But its great, its chief object, is to produce the food of plants by its chemical action on the *organic matter in the soil*. Hence, says Johnston:

"Lime has little or no effect upon soils in which organic matter is deficient;" and he farther says: "Under the influence of lime the organic matter disappears more rapidly than it otherwise would do, and that after it has thus disappeared, fresh additions of lime produce no farther good effect; . . . it causes the organic matter itself ultimately to disappear."

"It is scarcely practicable," says Brown, "to restore fertility to land even of the best natural quality, which has been thus abused; and thin moorish soils, after being exhausted by lime, are not to be restored."

"An overdose of shell marl," says Lord Kaimes, "laid perhaps an inch thick, produces for a time large crops, but at last renders the soil capable of bearing neither corn (grain) nor grass, of which there are many examples in Scotland." "The same," continues Johnston, "is true of lime in any form. The increased fertility continues as long as there remains an adequate supply of organic (animal and vegetable) matter in the soil; but as that disappears, the crops every year diminish both in quantity and in quality."

"On poor arable lands, which are not naturally so, but which are worn out or exhausted by repeated liming and cropping, lime produces no good whatever." (Anderson, Brown, Morton.)*

Let us now turn to the opinions of some of the most eminent European Continental writers. The celebrated Thaër in his "Principles of Agriculture" (Section IV. Part 1.) says:

"On no soils are the effects of lime so beneficial as on those which contain a great quantity of sour humus prejudicial to vegetation, or on those which have been supplied more or less abundantly with animal manure for a considerable period, without receiving an application of lime, or some other substance of a similar nature. In the latter case it is frequently much more efficacious than an amelioration of stable manure would be; but it soon impoverishes the soil so much that in a few years it becomes indispensably necessary to manure it abundantly with rich animal or vegetable matters. As some portion of the humus, although in all probability of an insoluble nature, always remains in arable land even when it appears to be much exhausted, it of course follows that an application of lime will always be productive of very marked effects even on the poorest soils, because it will call into action all the nutritive particles which they contain. A second amendment of a similar nature bestowed shortly after the first, will be productive of some, although in general of much less benefit; and the effect of each subsequent amelioration of this nature will be progressively diminished unless the soil receives an additional supply of humus. . . . The effect produced by lime on land of this nature (reclaimed bogs and marshes) is much more beneficial and durable than that of any other manure. On the other hand, repeated ameliorations of lime will soon totally exhaust and impoverish poor and sandy soils, and reduce them to absolute sterility, even though each separate application seems to be productive of some good effect. . . . Many persons who have not rightly comprehended the cause of the effects produced by lime, prefer it to manure, and have believed in the possibility of doing entirely without the latter; but the total exhaustion of the soil which such a course of proceeding must sooner or later produce, caused them to fly to the opposite extreme. . . . An en-

* See Johnston's Agricultural Chemistry, vol. ii. p. 139-142.
(1032)

lightened and scientific agriculturist will soon perceive that the use of lime can never supercede that of dung, but that it renders this kind of manure more energetic in its action. . . .

In many places where its ameliorating effects were known and appreciated, many agriculturists have calculated that marl would prove a cheaper manure than stable dung; and have, consequently, determined to do without the latter altogether; and, therefore, have diminished their stock of cattle, and sold their hay and straw. It may easily be imagined that as soon as the chemical effects of the marl ceased to operate, as must be the case when the land no longer contained undecomposed or insoluble substances, the soil became sterile, and a second marling was incapable of producing any beneficial effects, there being no humus for it to act upon."

Petzholdt, in his "Lectures to Farmers on Agricultural Chemistry," (Lecture XVII.) says:

"Quick-lime greatly accelerates the decomposition of humus, whether of animal or vegetable origin, inducing a more speedy liberation of its salts than would otherwise take place. This is the reason quick-lime has proved so advantageous in the cultivation of bogs; the lime not only accelerates the decomposition of the humus, but it may be said altogether to be the cause of the decay of humus, which, as it exists in peat, is scarcely by itself undergoing the process at all. . . . Where there is neither humus in the soil, nor undecomposed silicates, the application of lime as manure will be useless. . . . So much, however, is deducible from all experience, that the mere application of marl to an exhausted soil is of no use whatever, unless it is carried on the field in such quantities as to constitute a new soil, covering the whole surface to the depth of a foot. . . . In a chemical point of view, marl is not of any value except where the soil requires a supply of lime. . . . The other mineral constituents of marl are far too inconsiderable in amount to be reckoned upon."

Chaptal, in his "Chemistry applied to Agriculture," (Chap. iii., Art. 2.) thus expresses himself:

"It is acknowledged that lime is principally useful upon fallow lands which are broken up; upon grass lands, whether natural or artificial, which are prepared for cultivation; and upon muddy lands, which are to be put into a fit state for culture. It is well known that in all these cases there exists in the land a greater or less quantity of roots, which, by the application of lime, may be made to serve more immediately for manure, by the solubility it will give to the new products formed by them. . . . Independently of this effect, which, in my opinion, is the most important, lime exercises other powers, which make it a very valuable agent in Agriculture."

These authorities might be multiplied *ad infinitum*.

On the alternately too loose or too hard soils of the dry and barren lands of the tide-water zone, lime would doubtless have two salutary effects—the mechanical one already noticed, and it would furnish *one* necessary food of plants. But of its power to render these soils, or the exhausted ones of the middle zone, anything more than transiently fertile, there is no probability, if they are, as I suppose them to be, generally rather, and sometimes very, destitute of organic matter. This destitution I infer from ocular examination;* also from the fact that they are covered with little vegetation, with the exception of the long-leaf pine, to produce by its annual decay a store of organic matter; and, finally, if this organic matter existed in these soils in any considerable quantity, *they would not be sterile*. They probably possess the ordinary inorganic constituents of dry Tertiary and granitic soils, and no properties directly deleterious to vegetation. Organic matter, then, in my judgment, is what they principally stand in need of to render them fertile. Now, by applying lime to them, it would undoubtedly do good in two ways, as before admitted; but the considerable temporary apparent amelioration, as evinced in some instances by the increased growth of vegetation, is factitious, for the lime is only acting with and exhausting the little organic matter in the soil, to leave it to greater eventual sterility. Hence the saying that "lime enriches the father but impoverishes the son," is a true one when the lime is applied to soils possessing but a small proportion of organic matter. On such, lime soon

* I have seen no analyses of these soils, and mean therefore as I say, simply, examination by the eye. (1033).33

leads to exhaustion, unless *organic matter is added to the soil in proportion to the waste*. The theoretical and practical considerations which should govern in the application of this fertilizer to soils are discussed more fully and, in my judgment, more ably by Johnston, in his *Agricultural Chemistry*, than by any other writer. To him I take the liberty to refer you.

Marl raised from pits, as it must necessarily be (except when denuded, or cut through, on the beds of streams, &c.) where it occurs only as an under-stratum in a flat country—where the pits, too, often require machinery, or much manual labor, to keep them free from water while working—must be an expensive manure. From its tendency to sink in the soil it is not so permanent a one as would naturally be expected. On reclaimed swamp lands—as, for example, on the rice lands—abounding in vegetable matter, it will be found a most efficacious manure, and, *when needed*, will repay the necessary outlay; but I fear it will be found otherwise ultimately, if not immediately, on the barren sands and exhausted granite soils of the South. Applied *with* swamp mud, it would constitute a fertilizer scarcely, perhaps, admitting of a superior, even on the latter soils. In their *single effects*, however, I cannot but believe that the best swamp mud—that which is black and fetid by the long continued accumulation of organic substances (and especially if charged with shells, and the shields of Infusoria)—would be worth more per load than the richest marl. The mud, too, should be considerably cheaper than the marl, no deep excavations being required to obtain it.* Digging and draught, and, in the case of the mud, draught alone, would render both decidedly expensive manures, relatively to the value of the land after being ameliorated by them, even assuming that amelioration to be complete and permanent. On lands immediately contiguous to conveniently reached depositions of mud or marl, on a scale so limited that it could be carried on at spare intervals without encroaching on the regular routine of plantation labor, it might be good economy to haul out mud and marl, and thus gradually reclaim small pieces of land.† It certainly would be better economy than to waste those intervals in idleness. But in anything like an extended and speedy system of reclamation—the fertilization of thirty, forty or fifty acres per annum, instead of one, two or three—the means above adverted to are, in my humble judgment, utterly out of the question. The labor would absorb all the labor of man and beast on the plantation; and it is exceedingly questionable, in my mind, whether the land, when fertilized, would sell for the cost of the manure.

Hard would it be for many a South Carolinian or Virginian to turn his back on the *Lares* and *Penates* of his race—forgetting many a proud local and ancestral association—but as a question of dollars and cents, sometimes a necessary one, and, at all events, usually the paramount one, I think it past a reasonable doubt that it would be better economy to desert the worn-out or naturally barren soils of our South-eastern coast, and purchase the virgin and fertile lands of the South-west (even including the extra expense of building and fencing), than to attempt to reclaim the former by means so expensive as those above indicated.

What, then, is the resort? Are there *any* means by which those lands can be *profitably* reclaimed? I answer, Yes; and the resort is a mixed system of green and animal manuring—the latter made attainable by sheep husbandry. Experience is the best test of all theories. And we have had

* I am inclined to think, however, that this mud, if spread directly on the surface, would contaminate the atmosphere with unhealthy miasma, generating agues and bilious diseases. If so, it would require incorporation with the soil, by plowing.

† It seems to me, however, that these expensive manures would be more profitably applied in *keeping up* the fertility of the *best* lands, or as *assistants* to other and cheaper means of reclaiming the poor ones.

so little experience in the premises, in our own country, let us turn to that of the first agricultural nation of the Old World. There is no foreign nation where so high a degree of intelligence is brought to bear on farming operations—where cause and effect are so carefully studied and accurately noted—as in England. This care and accuracy are indispensably necessary in a country where high rent and heavy taxation render good farming or bankruptcy unavoidable counter-alternations to the agriculturist. Prevailing conclusions among such a class of agriculturists—*undisputed* conclusions, too—are assuredly entitled to great respect, and may almost be regarded as settled facts. Now the farmers of England are perfectly familiar with every kind of manure accessible to our Southern farmers, unless it be swamp mud and cotton seed. Lime, for example, is plentiful and cheap, and is much used in Agriculture all over the kingdom. If either this, or any of the manures of commerce, were considered, of themselves, economical fertilizers of the poor, sandy or light upland soils of England, there is no country in the world where they are more plentiful, and, when the use of the soil and the price of products are taken into consideration, more cheap.

What the settled conclusions of the English farmers are, in relation to the profitable amelioration of those soils, will be seen from the following undisputed testimony of some of the most eminent and respectable of them, taken before the Committee of the House of Lords, charged with the inquiry into the state of the wool trade, &c. in Great Britain, in 1828, from which I have so freely quoted in preceding Letters.

MR. WILLIAM PINKNEY, *Salisbury Plain*: Land such as I occupy could not be maintained without the aid of sheep. . . . The sheep are our principal dependence for supporting our crops; indeed, I could not occupy my farm without my flock.

MR. JOHN ELLMAN, JR., *Sussex*: I do not consider it possible for the light lands upon the Downs to be kept in cultivation without flocks. I could not keep the farm I now hold without sheep. . . . On the South Downs the wool must be grown, let the price be what it will.

MR. FRANCIS HALE, *Arlingham, Suffolk*: The description of land I occupy could not be kept in cultivation without the aid of sheep.

MR. HENRY KING, *Chilmark, Wiltshire*: The size of my farm is about 4,000 acres. I clip annually about 6,500 South-Down sheep. . . . Such lands as I occupy cannot be kept in cultivation without the aid of sheep.

MR. JOHN WOOLLEDGE, *near Bury St. Edmunds, Suffolk*: An estate near the above place contains 8,890 acres, let to tenants, and consists principally of poor sandy and gravelly land, the produce of which in grain is very precarious, amounting in dry summers to little or nothing. The occupiers, therefore, depend almost entirely on their flocks of sheep for the payment of their rents and the employment and support of the population. . . . I am of opinion that two-thirds of the counties of Suffolk and Norfolk may be comprehended in the sheep districts, and that they produce two pounds and a half of wool, and three-fourths of a lamb, to the acre, upon an average. . . . The produce of the land depends materially upon the folding system; there is not sufficient straw for manure without the assistance of sheep.

MR. WILLIAM ILOTT, *Abbey Milton, Dorsetshire*: I calculate the annual growth of wool in Dorsetshire at 10,000 packs of 246 lbs. each. It is estimated . . . that 800,000 sheep, or one sheep and one-seventh per acre, . . . are kept in this county. A considerable part of the county of Dorset is composed of light lands, and can only be kept in tillage by the aid of sheep.

C. C. WESTERN, Esq.: It is utterly impossible that the Down Districts can be cultivated to advantage without sheep. We never fold our Merino or other sheep; the land is too wet.

LORD NAPIER: If we had not sheep upon our lands (the highlands of Scotland), it would become the habitation of foxes and snipes, and return to waste; it would produce nothing but grouse and wild game of different sorts.

Is it asked, Why are sheep preferred to horned cattle? Many of the reasons are given in my preceding Letter. Then, again, the scanty and short pasturage of light lands, on which sheep will thrive, will not afford sufficient "bite" (as it is provincially termed in the Northern States) to

profitably carry large stock. And, finally, there seems to be a settled conviction among the English farmers that sheep give a better return for the food consumed, and therefore better repay the extraordinary expenditure necessary to bring poor lands in a fit state for the plow, than any other animal. In an able essay in the London "Plough" (June, 1846), the following remarks occur, which may be probably regarded as an expression of the prevailing opinion in England:

"It is justly admitted that, of all the domestic animals reared and fed for profit in Great Britain, sheep are of the greatest consequence, both individually and in a national point of view, and afford a better return than can be obtained either from the rearing or feeding of cattle: the very fleece shorn annually from their backs is worthy of consideration. . . . Sheep husbandry deserves to be esteemed in all its different branches, and claims the priority of consideration among agriculturists."*

The manner in which the "very fleece" is here spoken of, shows that wool occupies but a mere subsidiary place in making up the profits of English sheep husbandry. I know many intelligent and experienced farmers in *this country* who think sheep feeding more profitable, or equally profitable, with cattle feeding, leaving the wool out of the account.†

The experience of the English farmers accords with that of those of our own Northern and Eastern States, in relation to the superior advantages of sheep husbandry on poor and light soils. Observation has shown both that such soils do not profitably carry bullocks or other large animals, and that such animals are poorer manurers than sheep. But their methods of availing themselves of the advantages of this husbandry are entirely dissimilar. The English farmer finds mutton and grain the marketable products which pay best. The first returns a profit on the crop (turnips) which produces it, and at the same time fits the land for the latter. The high price and ready sale of mutton allows the English farmer to force the growth of turnips on poor soils, by the application of highly condensed manures.‡ In the fall the sheep are turned upon small patches of them, surrounded by an inclosure of hurdles. The turnips are drawn, sliced, and laid in troughs for the sheep. When one patch is consumed, the hurdles are removed, and thus the field is gradually passed over—the sheep converting the whole crop into animal products and manure. The land is then plowed for grain, and a succession of crops are taken from it. By this means the land is soon reduced to its former level, and the same system is again entered upon.

* After reading this and the preceding testimony, one cannot look back without a smile on the unaccountable monomania of that excellent man and public benefactor, Col. John Taylor, in relation to sheep. In one of the essays of "Arator," he says:

"My conclusions are that they require and consume far more food, in proportion to their size, than any other stock; that they are more liable to disease and death; and that they cannot be made a profitable object throughout the whole extent of the warm, dry climate and sandy soil of the United States, but by banishing tillage from vast tracts of country." . . . "It is probable that the hot constitution of sheep produces a rapid digestion, and that insatiable appetite, by which the fact is accounted for of their flourishing only, to any extent, in fine meadows or extensive wildernesses. If this voraciousness is not gratified, the animal perishes or dwindles; if it is, he depopulates the country he inhabits. The sheep of Spain have kept out of existence, or sent out of it, more people than the wild beasts of the earth have destroyed from the creation; and those of England may have caused a greater depopulation than all her extravagant wars. It may be owing to this animal, the independence of one country is almost overthrown, and of the other tottering." (!!) He farther expresses the opinion that England, "by the help of her moisture and verdure, can raise wool cheaper than the United States." (!)

It would appear that Col. Taylor formed all his conclusions on a small flock kept by himself. They may have been a bad and unthrifty flock. But it is strongly probable that he was influenced by deep-rooted prejudices, imbibed before his judgment was ripened, or his experience formed; and that these, unknown to himself, warped all his views. I can account in no other way for the evident and palpable hallucination under which he made nearly every statement in his Chapter on Sheep.

† A gentleman who has been one of the most successful feeders of cattle and sheep in this State (P. N. Rust, Esq. of Syracuse) recently remarked to me in conversation that he had invariably found that sheep paid better for feeding than cattle.

‡ Bone-dust, and frequently guano or some other manure with it, is drilled in with the turnip seed, so that much cost is obviated by making a little go a great ways; and there is a remarkable congeniality in the climate and atmosphere of England to the growth of this root.

In the United States, much of this system would be inapplicable and unprofitable. Here wool, instead of mutton, is the principal object. Even in the Southern States, where the climate would render the English system practicable, the expense of producing either of these articles, by winter turnip feeding and folding, would add so much to its cost that it could not profitably compete with that grown in the ordinary manner. The same remark applies to the relative expense of the two systems of manuring. A constant repletion of rich succulent food, like turnips, would sensibly increase the amount of manure, and, by folding, it would be more evenly distributed. But neither of these considerations would begin to offset against the increased expense, in a country where good lands are so cheap and bread-stuffs so low. Besides, no good, but, on the other hand, positive injury, would result from thus annually *fattening* "store"* sheep, kept for the production of wool and for breeding.†

The system of improving poor lands in the Northern and Eastern States by sheep husbandry, is mainly by summer pasturage. The droppings of the sheep gradually enrich them,‡ and consequently increase their herbage. Thus, in a few years, poor and scanty pastures are converted into rich, productive ones. This might be far more rapidly done by giving these pastures also the winter manure of the sheep, made in the feeding yards. But it is generally thought more profitable to give the winter manure to the richer tillage lands, which are made to supply the grain and hay of the farm. The light pasture lands are thus kept permanently in pasture, or are only plowed, by the provident, at very long intervals. This system is rendered necessary, or, at all events, convenient, by the topographical features of our farms. Here the poorer and lighter are generally the higher and more broken lands, which are less convenient of aration, and for the hauling on of manure, or the hauling off of crops.

In the Southern States, on lands which now yield even a smallish supply of esculent grasses, the northern system is all that is *necessarily* required. Those grasses will every year increase, and the land will be gradually fertilized, by the droppings of the sheep, without a cent's expenditure on it of any kind; and every particle of herbage will be turned to its most profitable account, by being converted into wool, mutton and manure.

But where there is not sufficient existing verdure to form the germ, so to speak, of a future good pasture—or, in other words, to support a sufficient number of sheep to convert it, within a reasonable time, into good pasturage—some other course must be adopted. Proper plowing and seeding, simply, will, I have not a doubt, be found adequate in a great many instances where it would hardly be suspected. It is very natural to take it for granted that a soil, not spontaneously producing the grasses, is not fertile enough to produce them, even if properly sown upon it. But experience has amply demonstrated the contrary in several of the North-western States. There are various causes, besides a want of fertility, which may produce such nudity; but this is not the place to enter upon speculations on this topic. Two very common and obvious causes are too great looseness or compactness of the surface, which prevents seeds from taking root, especially in a dry, hot climate. Plowing would always loosen

* This convenient word is provincially applied, in the Northern and Eastern States, to sheep and swine which are to be kept over the year, to breed from (and the former to produce wool), as contradistinguished from those which are fattening for slaughter.

† This point will again be adverted to. It is sufficient now to say that breeding-ewes, if brought to a high state of fitness, raise fewer lambs. The lambs are born weak, and are very apt to perish. There are also other objections.

‡ Aided by an occasional top-dressing with gypsum.

hard, and frequently stiffen loose surfaces.* The grass seed harrowed into a properly prepared soil, at the suitable season of the year, might so root itself as to withstand the subsequent heats, while those dropped on a hard or a loose surface by birds, or borne there by winds, would be exposed directly to the rays of the sun, which, if it did not entirely prevent germination, would dry up and kill the tender roots before they could strike deep enough to resist its influence. Much will depend, in this experiment, upon a proper selection of the variety of grass sown. That variety should be sown which is found to flourish best on similar soils, in the same climate, even though relatively it may be an inferior grass.†

By means as cheap and attainable as these, I have not a doubt that no inconsiderable portions of the nearly naked soils of the tide-water zone might be brought into pasture sufficiently good to make their ultimate conversion into prime pastures, by means of sheep husbandry, certain.

On the worn-out granite soils of the middle region, the once fertile red clay lands—now occupied only by dwarf pines, worthless broom-grass, etc.—deep plowing and thorough sowing (with the aid of steeps and the cheap top-dressing, before adverted to) would *generally*, I believe, bring these lands into pretty good pasture. These soils, having been subjected only to the one-horse plow, and hand tillage, *are worn out only on the surface*. This is proved, in innumerable instances, in Fairfax, and other northern counties of Virginia. Lands considered entirely worn out, and sold for a mere trifle, are subjected to the northern two-horse plow, and from one to three inches of earth, *never before disturbed*, is brought to the surface, which readily supports grass, and even grain crops—the latter temporarily. Thus, most fortunately, the means are still left, with the aid of pasturage, to make many of these lands profitably productive, and to restore them to much of their former fertility.

—We come now to another class of lands which may, in many cases, be worth reclaiming, but which will not, by merely being plowed and sown, produce sufficient grass to make their fertilization by sheep husbandry attainable—or attainable within a moderate period of time. These are the inferior (but not the worst) sands of the tide-water zone. Here green manuring must be resorted to, by means of plants which will better withstand the climatic and other difficulties in the way of their getting well-rooted, and which will flourish in poorer soils than the grasses. Both of these conditions are answered by various plants. Spurry (*Spergula arvensis*) and white Lupins (*Lupinus albus*) will flourish on dry, barren, and even shifting sands, and are extensively used as green manuring crops on such soils, on the Continent of Europe. From their rapid growth and extraordinary productiveness, they are admirably adapted to this end. The introduction of these plants would probably supply an important desideratum in Southern Agriculture, unless, as I have already expressed the opinion,‡ the pea leaves little to wish for, as a green manuring crop on every class of southern soils. Soaked in a solution of nitre—rolled in lime—top-dressed, after sprouting, with a slight sprinkling of ashes and gypsum||—

* The sands of the tide-water zone are everywhere, at greater or less depths, underlaid by clay. These might in some cases be reached by the plow, and portions of them incorporated with the superincumbent soil.

† See Letter III.

‡ In Letter III.

|| Sprengel's analysis, in Letter III., shows the large amount of potash required for the seed, and of lime for the straw of the pea. The favorable effect of plaster on this, as on most other leguminosae, is well known. Ashes, plaster and lime can be purchased here at an average of less than ten cents a bushel. A bushel of gypsum, mixed with say two bushels of ashes, makes a top-dressing which will pay for itself a number of times over, on any land to which I have ever seen it applied. In addition to rolling the seed in lime, a few bushels of it, or of marl, would make a good, and, where accessible and cheap, an economical top-dressing. When I speak of the price of lime here, I do not refer to marl. The latter, in its natural state, could be purchased at the beds for probably a shilling a load.

the pea would probably take root and flourish in any soil which the price of land in this country would justify an effort to render productive, now, or for a long term of years to come. Indeed, the capacity to produce this plant *may* afford the best practical test of the economy and expediency of attempting it in any given case. If a good green manuring crop can be made to grow on the soil without any more expensive aids than those above suggested, the *lever* of improvement—cheap, but effectual—is placed in the hands of the planter, and, if he possesses the least degree of energy, he has no occasion to seek a new soil and home by emigration.

Mr. Ruslin states, if I remember aright, that a few *quarts* per acre, of peas, are sown by the Southern planters. In the North, three *bushels*, at least, are sown; and this quantity would be little enough to produce the largest amount of green manure.

Theory would indicate that the crop should be turned under before it comes into full flower,* but experience and convenience both deserve consulting in the premises.

An active span of horses, with a Northern two-horse plow, and an expert plowman, would readily plow two acres per diem, on sandy soils, and plow it well.† The expense of getting in a crop of peas can then be readily estimated.

If one crop can be made to take root and grow, and is plowed under *when green*, the great point is attained, and there will be neither difficulty nor uncertainty subsequently. The organic matter thus deposited in the soil is the *basis* on which future improvements can be effected *ad libitum*. As far south as South Carolina, at least two, and probably three crops could be plowed in during a single season. This might be done in time for winter grain, and a crop of the latter sown as a covering crop with grass seeds. The grain would refund much of the previous expense.

Plowing in two or three crops in succession may, at first view, seem an expensive process; but, with the exception of the extra seeding, it is no more labor than is bestowed on *every* wheat crop by a large proportion of the farmers of Western New-York! When the ground is summer fallowed, the ordinary practice on our wheat lands is to have it three times thoroughly plowed and harrowed, and the first time a crop of clover is plowed in. All this is a light outlay compared with thorough marling, or manuring with swamp mud. And, after either of the latter processes, the land has yet to be plowed and seeded.‡

It would not be *necessary* to plow in as many as *three* crops of peas, to lay the foundation of ordinary pasture. Two, and possibly one, would suffice. The comparative utility of forcing forward the fertilization of land, rapidly or gradually, depends much upon the amount of capital which the landholder has to devote to this object. The amount of labor subtracted from the ordinary operations of the plantation would be very small, in any case, in proportion to the object to be attained. A single expert plowman, with a good team, could give even the three plowings to a large field.||

* "Because flower-leaves," says Johnston, "give off" nitrogen into the air; and, as this element is supposed especially to promote the growth of plants, it is desirable to retain as much of it in the plant and soil as possible."—Ag. Chem., vol. ii., p. 185.

† Perhaps more. That amount is frequently exceeded here, on stubble lands.

‡ So that the expense to be offsetted against one of those processes (in estimating their comparative economy as a means of reclamation with green manuring) is plowing, harrowing, and seeding *twice*.

|| I have attempted to fix no definite data on this point, because you, who are acquainted with plowing Southern lands, are better competent to do so. I would remark, in this connection, that my convictions are very strong that the introduction of the two-horse plow of the North would lead to a decided improvement in your Agriculture, from the superior manner in which it does its work, and by leading to deeper plowing. The wheel will cause it to run as shallow as a one-horse plow, however, where the character of the soil renders it desirable.

Even in the case of either of the two classes of soils before treated of (those now producing thinnish pasturage, or which can be converted into pastures simply by plowing and seeding), one or more green manuring crops would form a most excellent and accelerating initiatory step, and, where sufficient capital is possessed, I have no doubt, a most economical one, toward their fertilization.

In view of all my preceding statements, do you ask me if I advocate sheep husbandry exclusively, on all the lands at the South which already are, or should be devoted to grazing? Most assuredly not. I have already laid it down as a maxim that "agricultural production should be controlled by the demand or want, and the adaptation of the country to such production." By this rule, the South should, at least, never import a horse,* a mule, a pound of beef, pork, butter, cheese or wool. She *wants* them all, and she can *produce* them all more economically than she can import them. That declared impossibility in politics, an *imperium in imperio*, should be in Agriculture, so far as it may be consistently with the above maxim, the attitude of every farm and plantation. Each should be *independent* to the greatest economical extent, so far as the production of the necessities, comforts and luxuries of life are concerned, of every other farm or plantation in the *world*! This mixed and multifarious farming is objected to by theorists, inasmuch as it trenches on the division of labor principle. But it favors rotation, and thereby prevents the exhaustion of soils—leads to a more bountiful use of the every-day comforts of life†—and, finally, it is less hazardous. The one-crop farmer, if crop and market are both in their most favorable state, realizes great profits. But if the market is poor, or the crop small, the loss is proportionately large. The farmer pursuing mixed husbandry will not generally fall greatly behind the *best* profits of the other, and his losses are rarely considerable. It is better to play for a *hit* than a *gammon*, where, as in the case of the small capitalist, affluence or penny "stand the hazard of the die!"

If the above positions are true, the South is called upon to increase the breeding of other domestic animals as well as sheep. To an extent sufficient to *supply her own wants*, I consider her imperiously called upon so to do. I advocate the breeding of sheep specially—on a vastly more extended scale—because, as has been already shown, they are the best (if not the only) reclaimers of your unproductive lands; and because in that surplus of the products of grazing, which these extensive reclamations will bring about, *they furnish you the exporting‡ article (wool) for which you can find the largest extra-limital market, and in growing which you can best compete with other producers.*

Let us suppose, for the sake of the argument, that these newly reclaimed pasture lands would carry heavy beasts as well as sheep, and with equal benefit to the land. After supplying the home demand, what would be done with the surplus horses, mules and beeves? To what markets in the world could you export horses and mules, with the exception of some of the West India islands—the markets of which a few thousand head of these animals would annually glut? Do you ask me what would prevent your sending your surplus beef to England? Nothing. But neither the South, nor the North, nor the East, can compete with the great North-west

* Unless for the improvement of breeds.

† I mean by this that the planter who raises all the necessities of life will be more liberal of them than the one who *purchases* them.

‡ I do not use the word here in its technical sense. I mean carried beyond mere local limits for sale—whether that sale be effected in the same State, in some other part of the U. S., or abroad.

§ I have not alluded to the rearing of swine any more fully, as they are but partially a grazing animal.—But if the position assumed in the text is correct, it is another argument in favor of devoting your lands to the production of *surplus* wool, instead of *surplus* corn.

in producing beef (or pork) for exportation to foreign countries. Its immense natural pastures—the profusion and cheapness with which Indian corn can be produced on its virgin soils—give it an advantage which increased transportation by no means counterbalances. The question then arises—Why, for the same reasons, cannot the vast North-western plains produce wool more cheaply than the South, and undersell her in our own and the foreign markets? In the first place, the western pastures—that is to say, the wild or natural ones—which produce beef so cheaply, are, by reason of the coarseness and rankness of their verdure, *not* adapted to the *growing of sheep*. Secondly, the shortness and mildness of the southern winter give a decided advantage in wool growing, by affording green winter feed—an advantage not profitably available probably, on an extended scale, with large grass-feeding animals. Again, in the North-west, though there is less snow, the winter is about as long, for all the practical purposes of husbandry, as in New-York.* Killing frosts come as early in autumn; the naked ground is frozen as solidly, and far more deeply; and verdure puts forth but little if any earlier in the spring. The South then possesses the same great advantage with the North-west in the production of wool—*cheap lands*; and, superadded to this, she has the short, mild winters, which give her a decided advantage over both the North and North-west. She has a marked advantage over the Northern and Eastern States in *both particulars*, and, instead of importing manufactured wools from them, she ought to supply them, by export, with at least the raw material. And she will do this at no distant day, unless her sons are content, in the great struggle and battle of industrial interests, to sacrifice their own by apathy or irresolution.

* The winter feeding of sheep in New-York has already been stated to average about one hundred and fifty days.

NEW-ENGLAND ECONOMY OF MANURES.

It is well known that in all New-England, to have a *supply of peat at hand* is considered a very valuable appendage to a farm. There they say one-third stable manure and two-thirds peat well combined, is equal to the same quantity of stable manure. Why is it that the same material is, in the Middle and Southern States, so little valued, comparatively? Is it from an essential difference in the quality of what is called peat in the two localities? or in the no less essential difference in the habits of the people?—the one poking their noses here and there and everywhere in search of everything that can be converted to manure, just as they would look for money, if they were as sure of finding it, while the others overlook a thousand things that are just as much worthy of being gathered up and saved, as would be the money that only represents their value? We would ask any one who reads the following paper, (whether he concur in all, or differ with the writer as to some of his positions,) if anything short of absolute mental blindness can justify farmers in not rising up in a body and demanding the establishment of institutions for *preparing men* to give instruction, all over the country, in the *principles of Agriculture*, and in seeing that such instructors, being well qualified, be also *well paid and duly honored*, and placed at least on an equal footing with professors of the military or any other art? For, after all, is not Agriculture a complicated manufacture, requiring great art in the combination and use of the materials to be employed? What will a bushel of wheat do, itself, toward reproduction? Or were it in the hands of a man, were it possible to suppose a man, who knew absolutely *nothing* about cultivation? Clear it is that not only could he make nothing of the wheat itself, but neither

could he with it, and any one of the elements or means employed for reproduction. He would soon find that it would be of no avail to combine it with earth without moisture—nor with earth and moisture without heat—nor with these without air—nor with all these without light! Nay, even with the aid of earth, air, and moisture, and light, he would find other elements indispensable: he must have in all these certain kinds of food, adapted to *its particular nature*, to be consumed and digested by that particular crop. And then, again, to till, to reap, to gather, to thresh, with a profitable economy, and not to have its produce cost, like the Indian's gun, more than it comes to, he must have implements of various kinds, and these, again, must be constructed on certain principles of mechanical philosophy, to make them most efficient and available, and is any man bold enough or blind enough to contend that it does not require education, thought, acquirement, to ascertain whether and in what proportion these elements of subsistence be present, and in what quantity? Whether these implements are constructed on true principles and the animals employed of true form and constitution? Why, then, will not the Press of the country give its aid in bringing about this great consummation? Let us not be told that the public mind is not prepared for it. It is exactly in the right condition to receive the proper impulse: *it has begun to feel it*. There must be a beginning to all great moral movements. The time was when our British ancestors went naked, or wore deer-skin breech-cloths. From that age to the present the world has been meliorating, with occasional Providential or barbarous checks, such as pestilence and war; but the average movement has been glorious for the cause of humanity, civilization and the arts. The next great step is to be *suitable education for the agricultural class*; and we trust there is no harm in saying, *may God speed it!*

P. S. Let the reader note the *locale* of the following:

For The Farmers' Library.

MANURING PEAT LANDS.

DUTCHESS CO. (N. Y.) AGRICULTURAL INSTITUTE, Feb. 22, 1847.

THE question often arises in the minds of the agriculturist, *Why do Peat Soils require an application of manure?* Experiment has almost invariably proved that if yard or mineral manures are copiously incorporated with peat soils, the favor is as promptly reciprocated as when they have been employed upon a diluvium or alluvial soil.

Individuals of practical information only reason upon the subject something after this wise: that the substance composing peat beds once possessed vitality, and that all the essential elements for maintaining life and growth were present; consequently these essentials must still abound in the semi-decayed body, and why should these soils require additional organized matter in the form of yard manure to induce a good degree of productiveness? We conceive that there may be three reasons why productiveness is vastly augmented upon those lands by applying manures: firstly, an excess of deleterious acids; secondly, want of appropriate inorganic nutriment; thirdly, want of one essential organic element.

First, that there is excess of deleterious acids which retard the growth of cultivated crops.

This proposition will be readily conceded, when we inquire from what class or classes of plants peat has originated. The first impulse given to a peat production is the transportation of organic fragments by water to horizontal or slightly inclined grounds, which produce a marsh.

Mosses, lichens and reeds take root upon this marsh, flourish through the summer, but are stricken down by autumnal frosts, and are succeeded by a more luxuriant growth the following season. Thus the destruction and reproduction of these annuals are perpetuated, each season's product becoming nutriment for their successors.

In a few years there is such an immense accumulation of organized matter, from perishing cryptogamous plants, and from the accessions made by water, that plants containing more woody tissue begin to thrive, such as the brake and fern. These disappear after a time, and are succeeded by marsh grasses (*Carexes*) and stunted lowland shrubs; these, again, are followed by larger shrubs and trees.

Lastly, when the bed has become deep, some drier and more perfectly decom-

posed, there emanate the sturdy oak, the saccharine maple and the majestic elm, the richest and most immense spontaneous vegetable productions of the earth.

By a cursory glance at the chemical nature of those plants which at different periods have flourished upon peat beds, we discover in those first thriving, a superabundance of oxalic, tartaric and citric acids, all of which afford not the slightest nutriment to cultivated plants; on the contrary, their presence is exceedingly pernicious to plants abounding in animal nutriment. Again, in the carexes or stunted forest-trees acidiferous compounds predominate, which in constitution are diametrically opposed to those occurring in cultivated plants.

If any considerable portion of these noxious compounds shall remain in peat, by adding a substance that neutralizes their acidity, a mighty barrier to the prosperity of cultivated vegetation is removed.

Hence, when yard-manure abundant in Alkaline compound is added to soils abounding in acids, non-injurious compounds result; the same phenomenon occurs when gypsum or lime is incorporated with acidiferous soils.

The second defect is a want of appropriate inorganic nutriment. Although it contains an abundance of silex, which is an important constituent in vegetable development, it may not and, as we shall contend, does not contain a sufficiency of other elements no less essential than silica in vegetable economy. We may here introduce a physiological axiom, which will enable us to comprehend the phenomenon attending the application of mineral manures, and to better appreciate the value and certain indispensability of inorganic fertilizers.

The truth is this: all plants require inorganic nutriments; each species will select those elements peculiar to itself; perfect development of any plant is not insured unless there is a sufficiency of every requisite element, be it ever so diminutive in quantity. The second and third clauses of this truth have a material bearing upon the condition and improvement of peat lands. Each plant electively gathers from the soil those elements most congenial to its own prosperity; else how should the ash of wheat yield eight times the amount of magnesia that potato-tops do? or oats contain 53 per cent. of silica, and beans only 1 per cent.? And why should there be 6 per cent. of soda in mangel-wurzel and no traces of this alkali in oats, all grown upon the same soil. Those organized bodies that now lie mouldering in peat beds were hardy shrubs and forest-trees, requiring only those elements that would impart strength and inflexibility to their tissue, such as lime and silica; they predominate in the ash of forest-trees to the almost entire exclusion of magnesia, alumina and phosphates, all of which are indispensable to a luxuriant growth of crops furnishing animal nutriment.

That a deficiency of an essential element produces an abortive crop is strikingly illustrated in the culture of cereals: those sown upon soils containing an abundance of organic matter, lime, and soluble silica, produce gigantic stalks destitute of grain; by adding magnesia, an exuberant growth of stalk is induced bearing a withered grain, covered with an exceedingly tenacious epidermis; again, add a compound yielding phosphoric acid to the soil, when a perfect plant is developed, bearing a due share of nutritious aliment—evidencing that the weal or woe of the crop was dependent upon the presence or absence of the last administered compound.

Practical experience has long since established the fact that cereals do not flourish well as a first crop upon reclaimed peat lands, but that they are more successful after the land has received a dressing of yard or mineral manures, and has been ameliorated by tillage with other crops. Can any other cause be assigned for the increment given to the cereals than that a deficient element has been supplied by the yard or mineral manure? From this view of the inorganic ingredients in peat soils we deduce two conclusions showing the necessity of applying inorganic manures.

First, that the organized substance constituting peat, in its primeval or vital state, contained only traces of several inorganic constituents that are found abundant in cultivated plants; second, that a portion of these diminutive constituents have, during the process of decomposition, combined with pernicious acids, and are consequently unavailable nutriment. Now to the third defect in peat soils for the production of cultivated crops, viz., the want of one essential organic element.

Admitting that the four elements, carbon, hydrogen, oxygen and nitrogen, are essential, and did once exist in the substance that composes the soil, we have now to inquire whether these elements exist in the present state of the organic matter, and whether the peat in itself is adequate to supply all the elements necessary for the growth of cultivated crops.

The organic portions of plants are mainly made up of the three elements, carbon, oxygen and hydrogen, the per centages of nitrogen being exceedingly minute in all, but more especially in spontaneous ones. Chemical research has thoroughly established the fact that but a diminutive quantity of nitrogen exists in spontaneous plants, which fact will be at once conceded when we consider that upon the presence or absence of the azotized principle depends the relative value of all fruits, grains, roots and grasses cultivated for animal subsistence. The major parts of all peat beds consisting of semi-decayed spontaneous plants, can contain only those elements peculiar to that class which, when compared with the cultivated one, is found to be much inferior in the azotized principle.

Allowing all the nitrogen contained in the growing forest yet to remain in the decomposing mass, this vital principle will not be found to that extent that it is in animal excrement or decomposing cultivated plants. But to allow the retention of all the elements comprising an organic body during the process of decomposition, would be an absolute violation of the immutable laws that govern the *eremacausis* [putrefaction] of bodies. During the transmutation of an organized body from an active to an inert state, a slow combustion is carried on, and there are incessantly gaseous products evolved; among the most abundant of these is nitrogen in the form of ammonia. This compound is evolved most freely in the early stages of putrefaction from the slight affinity it possesses for the substance with which it is associated. Consequently a decaying body exposed to atmospheric agencies, is soon deprived of the all-essential principle, azote. Now, in the process of decomposition, which results in the formation of our peat beds, azote is the most important element eliminated, the decaying mass being deficient in ammoniacal attractives which escape with aqueous vapor into the atmosphere. This continuous process of elimination readily deprives the soil of its original diminutive quantity of azote.

If, then, the organized soil has relinquished, in the putrefactive process, a greater portion of one of its preëminent constituents, it is evident, by supplying this deficiency in the form of animal excretions, the luxuriance of those crops requiring a large per centage of azotic nutriment is greatly enhanced.

Hence, in the application of yard-manures abounding in alkalies and azotized compounds to peat lands, twofold results are attained: the alkalies neutralizing deleterious acids and the azotized matters, by decomposition, supply the deficiency of azote. By the use of mineral manures the same primary object is secured as by the inorganic elements in yard-manure; and, as a secondary effect, the unavailable nutritive compounds in the peat soil are gradually transformed into appropriate vegetable nutriment.

EXPORT OF FLAX SEED.

The season for shipments of flax seed having passed away without any exports, (except 15 tes.) we annex the following Table of exports for the previous twenty two years—thus:

| | | | |
|-------------------------|------------------------|-------------------------|-------------------------|
| In 1846.....tes. 14,382 | In 1841.....tes. 4,644 | In 1836.....tes. 18,054 | In 1831.....tes. 16,053 |
| 1845....." 9,184 | 1840....." 10,884 | 1835....." 29,821 | 1830....." 15,604 |
| 1844....." 2,477 | 1839....." 9,850 | 1834....." 17,362 | 1829....." 9,459 |
| 1843....." 4,259 | 1838....." 5,187 | 1833....." 15,093 | 1828....." 14,428 |
| 1842....." 2,954 | 1837....." 5,088 | 1832....." 8,120 | 1827....." 16,566 |
| In 1826.....tes. 15,272 | | In 1825.....tes. 25,713 | |

Query?—Why is it that *oil-cake* is so little used as food for beasts in this country, compared to England? It is highly valued there, not only for its nutritive qualities, but especially for the *value it imparts to manure*—in regard to which the discrimination of the English farmer is much nicer than ours. Will some friend who

has time please look into this matter and give us a paper about it?—Where to be had; the price; in what way and to what uses applied; what are the impediments to its employment in our country; might not the consumption of it be extended profitably?

IMPROVEMENT IN HEMP-BRAKES.

A GREAT DESIDERATUM.

JOHN S. SKINNER, Esq.

DEVONDALE FARM, near Newcastle, Del., March 23, 1847.

Dear Sir: I was pleased with your suggestion to allow 'THE FARMERS' LIBRARY' to become the vehicle of introducing to public notice the new inventions of agricultural implements and machinery—a matter in which your readers are especially interested—and I trust you may be remunerated for the expense you generously offer to incur for the engravings, in the increased popularity and still farther extended circulation of your valuable standard work.

I send you the description and drawings of a Hemp-Gin, invented and recently patented by my brother, Franklin P. Holcomb, under the following circumstances: My brother, who is a civil engineer by profession, but possessing fine mechanical talents, was stopping with me at my farm, when I happened one day to be reading, from the Farmers' Encyclopedia, what Mr. Clay says in an article he furnished to that work on the subject of Hemp-Machines, which is to the effect that no machine had ever been invented, and he feared none ever would be, to answer as a substitute for the hand-brake. I told my brother that he owed it to the fact of his having been a *farmer's boy* to supply, if possible, this great desideratum to the hemp-growing interest; and also expressed the opinion that we might probably grow hemp here to advantage, if the breaking and scutching could be done by machinery.

He finally went to work at it, and I sowed a small crop of hemp, which we water-rotted. This we got out with the machine. Still he did not think it perfect or right, and went on improving, and altering, and experimenting, for almost another twelvemonth; and meantime I grew a second crop of hemp for him.—This we also got out with the machine, and had a portion of it manufactured into rope. And, finally, the great difficulty that had troubled him so much—the waste in the scutching—was overcome, and we had the satisfaction of seeing this simple little machine break and scutch, with the least possible waste, at the rate of about 1,000 lbs. of clean, merchantable hemp per day—doing the work of some twelve or fourteen men.

But meantime Mr. Billings's machine had made its appearance; and our friend Gen. Tallmadge had commended it so highly in his Address before the American Institute, that my brother, supposing the final object had been attained, and never having entertained any pecuniary views in connection with it, proposed doing nothing farther with his machine. But he subsequently learned that Mr. Billings's machine, though no doubt an excellent one, was large, somewhat complicated, and costing four or five times the price of his, and probably intended rather for a stationary power to work in a manufactory, than for the general use of hemp-growers, to be worked by their hands, on the plantation, or in the fields. Under the circumstances, he applied for a patent, which was granted, and Mr. Obed Hussey, of Baltimore, machinist, the ingenious inventor of the Reaping Machine, has become interested in it, and will take means to introduce it to the attention of the hemp-growers of the West.

Nothing can be more simple in its construction. The rudest and roughest hands can work it, and with little danger of its getting out of order. The cost of it will be only from \$75 to \$100, exclusive of the horse-power. It requires about a two-horse power to work it. From my own experience in the use of it, I can confidently say, and assure my brother farmers of the West, that the largest crop of hemp they grow would hold out no terror, so far as the breaking and scutching of it was concerned, with the use of this machine. My clear conviction is that it will go into very general use in the hemp districts, and prove an important acquisition to this branch of Agriculture; and if it does, though not having the slightest pecuniary interest in it, I shall feel myself highly rewarded for the interest I have taken in the enterprise.

Truly yours,

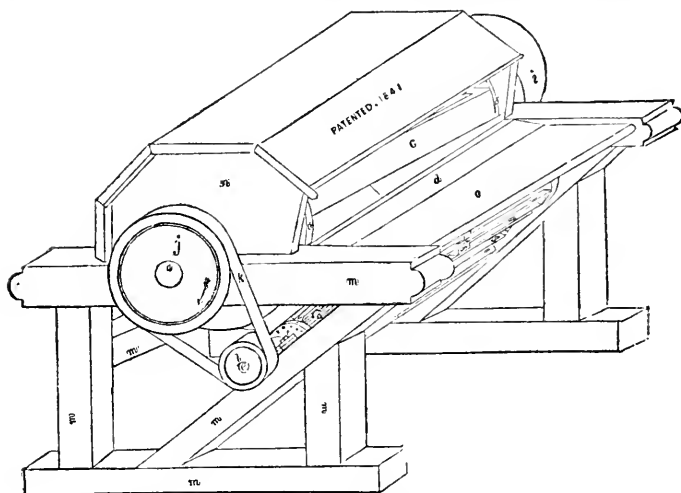
CHAUNCEY P. HOLCOMB.

SPECIFICATION OF HOLCOMB'S HEMP-BRAKE.

To all to whom these presents shall come :

Be it known, that I, F. P. HOLCOMB, of the town and county of Newcastle, and State of Delaware, have invented a new and useful ma-

chine for breaking and cleaning hemp at one and the same operation ; and that the following is a full, clear and exact description of the principle or character which distinguishes it from

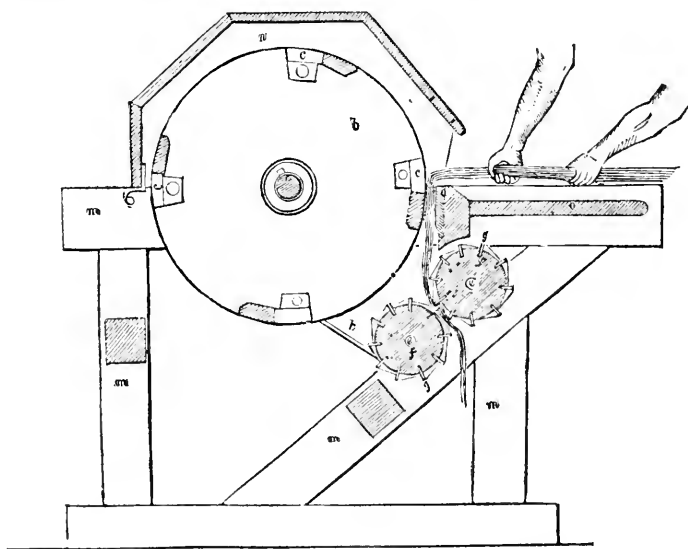


PERSPECTIVE VIEW OF F. P. HOLCOMB'S HEMP AND FLAX GIN.

all other things before known, and of the manner of making, constructing and using the same, reference being had to the accompanying drawings, making part of this specification, in which

figure 1 is a perspective view, and figure 2 a vertical section of the machine. The same letters indicate like parts in all the figures.

In machinery heretofore employed for break-



SECTIONAL VIEW OF F. P. HOLCOMB'S HEMP AND FLAX GIN.

ing and cleaning hemp, &c. at one operation, by revolving breaks, the hemp has been acted on during a large portion of the circle of revolution, the hemp being broken by passing it between

a pair of rollers or revolving breaks and scutchers, that mesh into each other, and break the hemp by bending it short between them. This method is highly objectionable, in consequence

of the great length of the fibre over which it is scraping, which is found to wear the hemp in practice so as to render it unmerchantable; it has also been attempted to break and clean the hemp between a revolving break and a stationary concave, but this method is liable to the same objections. In fact, the hemp never can be broken and cleaned by the same roller that breaks it, without subjecting it to injurious wear. Consequently, the machines have been abandoned as useless; for if the hemp is broken by a stationary break, against which the revolving break acts, and thence passes to another wheel, placed in contact with said revolving break, to be scutched, the break scrapes over the hemp the whole distance from the bed-break to the point where the scutcher acts, and wears the surface into tow.

My invention is for the purpose of obviating these difficulties, and is of the following nature: I employ a large revolving break, with the swords set at a tangent (this is necessary to the well-working of the machine, as a small one would present the swords at too great an angle), which acts against a stationary bed-plate, and there breaks the hemp as it is presented by the hand. The ends of the hemp, as soon as they pass down below the edge where they are broken, are thrown off by the centrifugal action of the revolving blades, and they do not come in contact with it any more, but, as the hemp is fed in the ends aforesaid, pass down and are caught between the scutchers at the angle of their junction, without laying against either so as to be rubbed, and is thus cleaned. The scutchers are very small cylinders, with blades projecting from them radially, that only mesh slightly (if at all) past their pitch-lines; these only act on that part of the hemp immediately between them, or at the junction of their curves, to clean it, and it passes through them without injury—which is not the case where the breaking and cleaning are done by the same wheel or roller on the different parts of its circumference.

The construction of my apparatus is as follows: (On the cap-pieces of a suitable frame *m*) I suspend a shaft (*a*) in suitable bearings, on which I affix two cylinder heads (*b*), to which I attach any suitable number of slats or beaters (*c*); these are placed diagonally, and are made to act on a straight, horizontal, stationary bed-piece (*d*), which is armed with iron and attached to the frame (*m*); back of this bed-piece, and a little below its surface, there is a feed-board (*e*), over which the hemp is fed into the machine; just below the bed piece, two small scutcher cylinders (*f*) are so placed as to receive the hemp between them without wrapping on either, the blades (*g*) of which may work into each other more or less, according to the material to be acted on. The hemp is held in the hand of the workman to be cleaned, and is presented over the bed-piece (*d*), (as clearly shown in figure 2.) where it is gradually broken as it is pushed in, and the ends are thrown down in between the scutchers, where the shieves or hurds are thrown out. The hemp in this way is fed in, cleaned half its length, and then turned and the other half finished, and the hemp comes from the machine in a perfect and merchantable state.

Having thus fully described my machine, what I claim as my invention, and desire to secure by letters patent, is the combination of the stationary bed break and the rotary break, and small scutchers arranged in the manner described, so that the hemp can be fed in by hand, broken and cleaned with but one handling and at one operation—the breaking and cleaning being done on separate cylinders, but the parts so arranged as that they are brought close together, and so adjusted as to only allow the machine to touch that part of the fibre that is to be acted on, thereby preventing its wear in the machine.

F. P. HOLCOMB.

Witnesses { A. P. BROWNE,
 { J. J. GREENOUGH.

OLD MARYLAND—HARD TO BEAT, AFTER ALL.

WE much doubt if any portion of the United States has been so much misrepresented, not to say abused, or if any is so much undervalued, as Maryland south and east of the great Mail road. Nothing but the most unfounded and incorrigible prejudice, together with its location, withdrawn as it is from public view, could have prevented it from realizing the prodigious advantages prepared for it by the hand of Nature, and making it at this day the most populous, instead of being one among the most thinly settled parts of the United States.

If we held the political power of the State, we would do for Maryland what every State, and, if not every State, every County, should do for itself. We would cause an actual survey to be made, and all its features and sources of industry and fruitfulness to be mapped and otherwise portrayed, so that all its capabilities, whether agricultural, mineral, commercial, geographical and hygeian, should be fully and honestly displayed to the view of every impartial inquirer.

Communities rarely reflect how much they may be prejudiced, collectively and individually, by the ignorance, sometimes by the malicious perversions, of statis-

tical writers and historians ; and, for ourselves, we do not know of any region of our country which in this way has suffered so much in general repute as the *Eastern Shore of Maryland*. We have not now here either leisure or space to illustrate this impression of ours, as we might do ; but let any man at all acquainted with the natural fertility of the soil over a vast proportion of that district, and with its unequaled advantages in its cheap transportation to, and its choice of markets, read the following, which is the description with which a stranger or foreigner would be most likely to be met, in any extensive range of inquiry for a country to settle in :

“ The part of the State east of the Bay is called the *Eastern Shore* ; the part west, the *Western Shore*. The country on the eastern side of the Chesapeake Bay, with the exception of a *small part* of the northern extremity, is an extensive plain, *low and sandy*, much intersected by rivers and creeks—having few springs, and *abounding with stagnant water*. In this part [that is, all except a “*small part*”] the air in summer is moist, sultry and disagreeable, and the inhabitants are subject to agues and intermittent fevers, and many of them have a sickly appearance.”

In this flattering portrait, to be found in a popular Cyclopædia, behold ! ye farmers of the Eastern Shore, one of the influences under which, with unrivaled capabilities, your population has been stationary for the last thirty years, and that almost within sound of the fire-bells of Baltimore and Philadelphia, and within a few hours’ steamboat communication with New-York, and other town populations, amounting to a million of consumers of all your produce !

We remember, many years since—indignant at the injustice done to you by that common liar, Madame Rumor—to have published in the *American Farmer*, in reference to the charge of unhealthiness, a list of a greater number of very aged people, male and female, then residing within a given distance of the “*Royal Oak*,” in Talbot county, than were to be found within the same area, probably, in any part of our country. As to the “sickly appearance,” said to be characteristic of the people of the Eastern Shore, we doubt if the writer had ever attended a gathering at church, or at a cattle-show, or a fish feast, or a “public day” in Kent, or Queen Anne’s, or Talbot, or Dorset, or Somerset, or Worcester counties. They are not people of “sickly appearance” who hunt, and shoot, and ride, and spread such tables, and play at knife and fork, as they do. There is, it may be admitted, some *locomotion* in the surface soil around Snow-Hill ; but, as every swallow does not make a summer, that should not give to nine counties the character of being “*low and sandy*.” And, as for their social and moral habits, we think we know “some ;” and when we speak of their hospitality, we speak of what is universally admitted. The same may be said of their integrity and pride of character, *as a community*.

In all large flocks, there are apt to be a few black sheep, and even their wool has its uses. Besides, it takes a good many kinds of people to make a world and give it the charm of variety ; but we hope there are, or soon will be, none to deny the *intellectuality* of the farmer’s pursuit. *Any folly or outrage but that !* As to their *pride*—whether from a consciousness that their country is underrated abroad, or what, we know not, but they must allow us in candor to add that, when from home, the Eastern Shoreman is a *little* stiff-necked ! Like the Indian, he stands up so straight that he leans backward. Thus it is that, when abroad, they never, or very rarely, make the first advance toward sociability ; but when they see that you are ready to do them justice, and give them their due, then will you begin to know what a hospitable and true-hearted man is.

As to the soil, we may mention—though not, by any means, as fair specimens

of general average produce or management—that among (we don't say because) subscribers to this journal in Talbot and in Dorchester counties, two of them the past season grew, one upward of 70 bushels of Indian corn to the acre, on more than forty acres, and the other 2,000 barrels on two hundred acres; and this corn might be shelled from the fields where it grew, into the holds of vessels, at the rate of 1,000 bushels a day, by machines invented by one of these farmers, and be transported to a cash market for 4 or 5 cents a bushel. *Why be forever dreaming of change?* Is it not better to let very well alone—except in trying to improve it?

AGRICULTURAL SCHOOLS.

GROWING EXCITEMENT ON THE SUBJECT—COURSE OF INSTRUCTION PROPER TO BE PURSUED IN THEM.

RARELY, within our observation, has the public mind evinced more numerous and unequivocal signs of increasing and general interest on any subject than is now manifested, more and more, every day, in reference to *Agricultural Education*. Three long columns of a late Albany paper are filled with a highly edifying and important discussion on Agricultural Colleges, in which Members of the Legislature and of the State Agricultural Society participated. We should rejoice to see this debate copied into every paper in the Union; and how much more useful for general reading and consideration would it be than the incidents of party struggles, and the details of bloody battles!

It was well done, on the part of Mr. S. Howard, “of the Cultivator,” to warn the public not to be too impatient for carrying out and realizing the public wishes in this matter. “He thought the necessity of having a plan fully matured and understood as obvious. It was the wise remark of Franklin to his nephew that in whatever he did there should be a *plan*. The causes of failure had been in the intrinsic defects in organization.” “The qualifications necessary for the management of such a school are rarer than are at first imagined. They embrace the whole variety of agricultural knowledge.”

Many gentlemen took part in the discussion, with a degree of earnestness that evinced much anxious reflection and that gives assurance that the *people* are beginning to be persuaded that they have a right to use their own means for the instruction of their own children in the art and principles of their own business. We venture to express the opinion that these schools should not be left, any more than naval or military schools, to depend on *individual contribution*. They are, of all schools, the most proper objects for, and the most entitled to *public patronage*. In every State, its proportion of the proceeds of the public lands should be appropriated exclusively to the support of Normal Schools, in which young men should be gratuitously prepared to act as agricultural professors in subordinate county and district establishments. In the mean time, might not a direction be given to the patronage *now* bestowed on the district schools in the State of New-York that would throw into the course of education pursued in them a *deeper infusion of agricultural knowledge and literature?*

But we have no space or time now to discuss details. We beg again for the sympathy and aid of the Press in pressing this subject home to the minds of the people—the farmers throughout the country. Let us go on begetting the *will*,

assured that in this, as in all other cases, where there is a *will* there is, or soon will be found, a *way* to do everything. Time and public anxiety will soon work out the plan. But as Mr. Howard wisely remarks, to prevent miscarriage we should be careful on that point.

In regard, then, to the plan and course of instruction, it may be of some use to give from the English "AGRICULTURAL MAGAZINE" an outline of a course of instruction adopted in a distinguished agricultural training school, at which it is said are sons of gentlemen from most of the countries in England, as well as from Wales, Scotland, and Ireland. The officers are, a *Resident Head Master*, three *Resident Assistant Head Masters*, a distinguished *Professor of Agriculture and Botany*, Mr. J. DONALSON, author of "British Grasses," "Treatises on Manures," &c.; together with *Professors of Breeds—Management and Diseases of Cattle—Chemistry—Geology and Mineralogy—Natural and Experimental Philosophy—Practical Surveying and Leveling*.

In the departments of *Agriculture* and *Botany* the instructions embrace the practice and the principles of Agriculture in the various counties. The history of all the operations are dwelt on with minuteness, and the effect of each pointed out on the farm attached to the school. The process of drainage, application of manures, erection of farm buildings, and formation of roads, and these subjects are not only examined and explained in the class-room, but practically carried out in the field.

On Botany, the lectures are not simply confined to the distinguishing of one class of plants from another, but embrace their uses, growth, habit, properties, the laws which regulate their distribution, as well as their existence and the laws of vegetation, whereby Agriculture, Horticulture and Floriculture, whether in the garden, the field, or the forest, are rendered most productive. It is the endeavor to render practical, as well as theoretical, the instruction to the pupils; especial attention is devoted to a thorough knowledge of the distinguishing characters of the grasses, cereal, natural, and artificial; their growth and productiveness, as well as the soils and manures suited to them. The Professor, in furtherance of these views, and with the object of rendering his instruction entertaining as well as useful, accompanies the pupils occasionally in their botanical excursions. For this department Mr. Gowen, for his Mount Airy College, need go but a little way, if Doctor DARLINGTON, of his State, could be had.

BREEDS, MANAGEMENT AND DISEASES OF CATTLE.—In this course of lectures, the external conformation of the ox, sheep, and other domesticated animals, with the internal structure of each, both in reference to the changes caused by disease, constituting Pathology, and the uses to which the various parts of the frame are applied, constituting Physiology, are explained. The treatment and causes of disease, and general management of cattle are particularly dwelt upon. The lectures are illustrated by anatomical drawings and specimens, both morbid and healthy.

CHEMISTRY.—These lectures comprehend the properties of the most familiar bodies, their bearing upon the economy of Nature, and their useful application; comprising the elementary substances, oxygen, nitrogen, &c.; the metals; the earths; the properties of heat; light; the laws of chemical affinity; of composition and decomposition; the elements and proximate principles of vegetable and animal substances; germination; assimilation; secretion, &c.; fermentation, viscous, acetous, putrefactive; soils; fallows; manures, vegetable, animal and mineral. The subjects of the lectures are illustrated by experiments, and instruction in chemical analysis is also given in the Professor's Laboratory.

GEOLOGY AND MINERALOGY.—The objects of the Professor in this course are to convey, in the most familiar and instructive manner, the fundamental principles of these sciences; their connection with Chemistry, Botany, Zoology, Astronomy, and Physics; and their practical application to several of the most important wants and utilities of life.


NATURAL AND EXPERIMENTAL PHILOSOPHY.—This department embraces instruction in the elements of Mechanics, the mathematical principles of Statics, or the art of weighing solid bodies; Hydrostatics, or the art of weighing fluids; Dynamics, or the science of the motion of bodies that mutually act on each other; and Hydraulics, with their various practical applications; the theory of the strength of materials, of the stability of structures, the principles of mechanism, the dynamical theory of machines, and of the steam-engine in particular, are fully explained, and the lectures are amply illustrated by models, diagrams, &c.

PRACTICAL SURVEYING AND LEVELING.—This course is at once theoretical and practical; in the school it embraces the various in-door details of a land surveyor's office; and in the field, the uses and applications of the several surveying instruments. It also includes the measurement of timber and artificer's work, the theory and practice of leveling and draining, the making of sections, and mapping from the field-book, and all the requisite and practical detail of geodesy, or the art of surveying the earth on whatever scale.

ANALYSIS OF SOILS, ETC.—The analysis of soils, manures, the various chemicals used in the arts, as well as all the varieties of minerals, are undertaken, for the purpose of determining their value; estates surveyed and mapped: timber measured and valued.

It is not that Professors well qualified are not to be found in our country, if suitable rewards and distinction were offered. We doubt not our military school graduates every year a number who would make very distinguished instructors in several departments, but they are for the most part either the sons of men of independent fortune, who return to their estates, or who choose to follow more attractive professions, or who remain in the army, where their pay, besides being equal, or nearly so, in the beginning, to our best-paid professors, carries with it the inestimable advantage of a *life commission* and sure increase of rank and emoluments.

For a single institution it would be easy at once to name highly accomplished Professors, were it not invidious, but it would be to the dishonor of the country to suppose that such men are not already better provided for. But truth and justice, after all, demand the acknowledgment that in no department of social life and useful labors is such gross and short-sighted injustice perpetrated by society as in its mean estimate of the pay and respect due to *instructors of youth*. The money expended for military purposes, even in time of profound peace, would secure to the *mass of young persons throughout the United States* such an education as is described above. Is it possible that an enlightened, self-governing people will much longer forbear to demand this more noble and salutary appropriation of their contributions for the support of Government?

 **THE LIST OF PREMIUMS OFFERED BY THE NEW-YORK STATE AGRICULTURAL SOCIETY** has been received from the obliging and accomplished Secretary, and extracts have been prepared, with such observations as they seemed to suggest; but want of room compels their postponement to our next number, in June. The approbation expressed will not, we hope, be the less acceptable for not being altogether wholesale and indiscriminate.

AGRICULTURAL COLLEGE AT MOUNT AIRY.

In recognition of the popular feeling referred to in the preceding article, and from his own clear perception of what is demanded for the dignity and benefit of American Agriculture, proposals have been issued by Mr. JAMES GOWEN, (well and favorably known for his zeal and energy, and the liberal scale of his expenditures in the field of practical Agriculture,) for the establishment of an Agricultural College at Mount Airy, near Germantown, Pa., in a healthy region of industrious practical Farmers.

"The terms will be *two hundred dollars* per annum, for board and tuition, payable half-yearly in advance—no extras, except for modern languages, for which it may be necessary to make some additional charge."

Were it our custom to insert, as it is not, either advertisements or proposals at length, which, like this, are in the nature of advertisements, it would be altogether unnecessary in this case, for the information of the public, it being all sufficient, if not more respectful toward him and his design, merely to state that Mr. GOWEN has undertaken to supply what he justly considers "the great desideratum—a training in rural economy, pending the progress of the student in literature so that when he shall graduate, he may not only have achieved the usual attainments acquired in literary institutions, but exhibit a thorough and well grounded knowledge of practical and theoretical Agriculture and Horticulture, and possess, in a superior degree, the presumable addition of good health and habits; being thereby the better fitted to enter upon the general duties of life, or into any profession as that of Agriculture."

Than this enterprise of Mr. G., few can be imagined of a more responsible character, when its true nature is properly understood and appreciated; and none can excel him in the spirit to go ahead, in whatever he undertakes as proved by the best of all tests—his actual success in the branches of industry to which he has devoted his time and talents. For the conduct of such an establishment, he is among the last who need be told that Professors of the highest attainments, of the purest character, and of the most elevated ambition, will be required. Happily, and doubtless with a view to insure such men, the terms prescribed will command the services of the first Professors to be found, whether at home or abroad. Under the management of such men, all cultivators who can afford it will rejoice on behalf of their sons, to avail themselves of an institution where they may be taught not to follow in the footsteps of their predecessors, but to advance, by a more elevated path, to a higher platform of intelligence and efficiency. An institution in which they may be inspired with a fondness for their pursuit, by the charms of its proper literature; and where they may learn by experiments on the spot to comprehend and illustrate all its principles.

The chief difficulty as we apprehend, will be to engage professors of the various and proper qualifications. It is to rear and provide an ample stock of such, (we may here repeat), that we need in the first instance, *normal establishments in each State in the Union*, to be maintained and conducted on a plan similar to that of the West Point Academy. See, after waiting happily for thirty years, for an opportunity to gather the crimsoned fruits of warlike achievements, what irresistible prowess and efficiency the *élèves* of that institution communicated to the

American army in every battle-field ! Glorious for the national arms as have been the results of every encounter, where the science of the school has directed the valor of the soldier ; how yet much more beneficial for the great interests of society would it be to have schools in every State, that would insure scientific direction, every day, and every year, to *the whole agricultural industry of the country !*

In alluding, however, to the difficulty of procuring highly qualified professors, in the various departments as described in the preceding article, we ought to add, that if we rightly appreciate Mr. Gowen's temper, it is just of that sort, which difficulties only stimulate until they are overcome. We need hardly add, farther, that we hope and wish for his enterprise all the success to which its great usefulness entitles it—amply provided for, and well conducted, as we cannot doubt it will be.

FENCES.

A BURDEN ON THE AMERICAN FARMER.

To the Editor of The Farmers' Library :

MARYLAND, April, 1847.

SIR : As the friend of Agricultural Reform, I have taken the liberty of addressing you on a subject of vital importance to the farmer of every State in the Union, and more particularly important is it to those of the old States, where every year the scarcity of timber is becoming more apparent. I allude to the present system of inclosing land, or, in other words, it may be called the "fence oppression." Did the intelligent farmer reflect a moment and estimate the annual tax which his fences impose upon him, he would not rest till the system was abolished, or else the live hedge took the place of the present expensive fence of timber.

The system of compelling every landholder to inclose his property is peculiar to the United States, with only the exception of England, where the fence nuisance appears again under the form of the hedge ; and although these hawthorn hedges, when they are well tended—and not more than half of them are so—are beautiful objects, and answer all the purposes of protection against the inroads of cattle, still the public voice is beginning to cry out against them, because of the enormous amount of land required to support them. Each hedge is 5 or 6 feet wide at its base, and taking into account the amount of land they exhaust on either side, the whole space cannot be less than 12 or 14 feet wide. When it is recollected that the divisions and subdivisions of land in England are very numerous, the amount of arable land abstracted from the purposes of Agriculture is very great. It has been estimated at several million bushels of grain.

Now turn a moment and look at the situation of things on the Continent, particularly in France, Germany and Italy. In these countries a fence of any kind is a rare sight ; cattle are never seen unattended (unless tethered) on the fields. If the farmer has a piece of land he wishes to graze, the cattle or sheep are put under charge of the shepherd's dog, and with his sagacity and the docility of the animals, but little difficulty is experienced in confining them to a limited spot. Sometimes a little boy or girl may be observed holding the cords attached to the horns of 3 or 4 cows, while they graze quietly around.* In connection with this subject, it may be proper to remark, that neither in Great Britain or on the Continent are cattle allowed to go at large upon the public highways. In journeying through France—now one of the best cultivated countries in Europe, 100 square miles producing, probably, at least as much as the same amount in England—it seems

* In Turkey they consider an annual *grassing* of three weeks as necessary to the health and condition of their horses. About the 1st May they are sent into the country and placed in fields of grass or grain which has just arrived at a mowing state. Each horse is tethered to a stake by a rope about eight feet long ; this gives them a circle of sixteen feet diameter to feed from, from which, when they have eaten close, the stake is drawn and moved to a fresh spot, a very economical plan of consuming the product of a field. All the horses wore heavy woollen covers.

as though you were riding through one vast farm, no perceptible divisions of property being visible. Lucern, clover, &c., are grown in large quantities, and fed to the cattle in the yard adjoining the barn or stable.

No doubt the chief cause of the depressed state of Agriculture in the United States, is owing to the extensive system of fencing, which, amounting to a heavy annual tax, consumes the best proportion of the farmers' profits. Mr. Biddle, a few years since, in an address before the Philadelphia Agricultural Society, stated that the cost of the fences in Pennsylvania amounted to \$100,000,000, and their annual expense he estimated at \$10,000,000. A distinguished writer on National Wealth says: "Strange as it may seem, the greatest investment in this country, the most costly production of human industry, is the common fences which inclose and divide the fields. No man dreams that when compared to the outlay of these unpretending monuments of human art, our cities and our towns, with all their wealth, are left far behind. In many places the fences have cost more than the fences and farms are worth. It is this enormous burden which keeps down the agricultural interest of this country, causing an untold expenditure, besides the loss of the land the fences occupy."

Estimating a chestnut post-and-rail fence to last 18 years, and including inside fencing and repairs, the *annual* tax to the farmer holding 150 acres will be \$130 to \$140, and judging from present appearances, this tax is eternal, and there seems but little hope of escape from it. Now, if we must have hedges, why not adopt the live hedge; for at last a plant has been found which possesses none of the objections to which all other plants hitherto tried in this country have been found liable. The plant in question is the Osage Orange, now extensively used in the neighborhood of Philadelphia, where it has proved eminently fitted for the purpose. It is perfectly hardy south of New-York, growing rapidly and forming a beautiful, impregnable hedge, in five years; it is also free from the attacks of all insects as well as animals. Double rows form the best hedge, though many of those about Philadelphia are planted in single rows. At \$12 50 per 1,000 plants, it would cost somewhere about \$375 to fence the exterior of a farm of 150 acres; and this, you will recollect, never has to be renewed. The two annual trimmings it requires will, of course, take some time, but nothing in comparison to the time and expense required in repairing a fence of timber. But it is unnecessary to go to the expense of purchasing all the plants required: by procuring 1,000, or a quart or two of seed, and planting them in a rich nursery, cultivating them for a year, they then may be taken up, (to set where the hedge is to be formed,) and the trimmings afforded by the roots, by proper planting, will afford another lot of plants, and these, when large enough to set out, will afford more cuttings from the roots; and thus, by beginning with a few plants, one may fence any number of acres he desires.

These remarks have been hastily written, not so much with a view to publication, but rather to call your attention to a subject which, whether resolving itself into the question of doing away with all fences or adopting the live hedge in place of the rail fence, is of great importance to the agricultural interest.

A SUBSCRIBER.

GOVERNOR WRIGHT:

HIS ADDRESS TO BE DELIVERED BEFORE THE NEW-YORK STATE AGRICULTURAL SOCIETY.

We rejoice to see that Governor Wright has consented to deliver the next Annual Address, not knowing on whom we could more safely rely for a strenuous maintenance of the preference to which Agriculture is entitled, as far as legislation is brought to bear for the promotion of any of our industrial pursuits.

We doubt not we shall hear him dwell on its claims to be considered an intellectual employment, to be rendered, like other professions, more dignified and profitable in proportion as it is conducted with an understanding of the principles which, in its very nature, belong to it, and that he will insist and enlarge on the right of the agricultural community to have a just proportion of their contributions to the support of Government and other educational institutions so appropriated as to promote, especially, a better knowledge of the arts of cultivation and the rights of the landed interest.

SCRAPS.

SEEDLING PLANTS AND VEGETABLES.—Agricultural Societies, if guided by reflection, instead of precedent, would offer to those who by persevering experiment establish new and valuable varieties of fruits and vegetables, ten times as much as they now offer for sleek stallions and pampered geldings, and heavy crops from patches of corn.

A new variety of the potato, for example, is generally considered to continue in perfection not more than 14 years. Fresh varieties must therefore be raised—and how few will take the trouble to do it? He who does, and succeeds in supplying the place of a declining peach, or apple, or potato, is a *real* benefactor of his country, and deserves higher reward than the inventor of a new shell for dealing death and destruction to the human race, which, by-the-by, rarely falls upon the real authors of the mischief that plunges nations into war.

MANURES OUGHT TO BE EXEMPT FROM TOLLS. In England, the statute of 52 George III. works a general exemption from toll for the benefit of Agriculture, in favor of wagons, carts, &c., loaded with manure, as well as those going empty. So our Legislatures, in granting charters for these highways, should exempt from toll, or greatly diminish the charges on loads of lime, guano, plaster, and all other substances when going to be used bona fide and extensively *as manure*. Nor would these incorporated monopolies lose anything in the end, inasmuch as the produce and population of the country to be enriched by the application of these manures would be increased in proportion, and the roads and canals be thus fully indemnified and the State strengthened in numbers and wealth.

DOCTOR JOS. E. MUSE, well known to the friends of American Agriculture as a distinguished and scientific investigator and practical experimentalist, speaking of Indian corn says: "The *Baden* has been my favorite for many years, as the most productive and most heavy of any kind I have ever tried. I mean the pure white-flint *Baden*. There are several varieties passing under that name, very inferior to that I allude to." But the Doctor adds that last year, on two measured acres, one with *Oregon* and one with *Baden*, planted under precisely similar circumstances in all respects, he got ten barrels of the *Oregon*, and only eight of the *Baden*.

☞ We regret that the communication of "*Reuben Roadside*" was received too late for insertion in this number.

(1055)

GUANO—*Sometimes injurious, and when.*—Mr. Rendle and other persons record, as the result of dearly purchased experience, that where guano has failed to be beneficial, or has been injurious, it has been applied in quantities too powerful for the plants to bear. In a liquid state *half an ounce per gallon of water*, and given to growing plants once a week, it never fails to be productive of vigor. Five hundred weight to the acre has been known to double the crop of onions.

WHEAT CROP.—There is reason to believe that the crop of wheat now on the ground has been considerably injured by an open, freezing and thawing winter, the last snows of which are fast disappearing. We have taken considerable pains to collect the earliest and most reliable information on the subject, in order that we might keep our readers duly advised in a matter of so much commercial as well as agricultural importance. The extent of the damage done to wheat cannot as yet be definitely known. It will be found, if we mistake not, far more serious than usually occurs in Western New-York. [Rochester American.]

We apprehend the above remarks are applicable to a very large portion of the country. One of the most reliable men in all respects, writing us from Maryland, says: "What a wet winter we have had! and how adverse to all farming operations"!!!

☞ It's a tall feather in the cap of the old AMERICAN FARMER, the pioneer in the field of American agricultural literature, to have a judge so eminent as Doctor MUSE say of it: "It is in my opinion one of the best agricultural journals in our wide country, whether we regard its selections or its editorials."

"*Laus est laudari a laudato viro.*"

PRESERVATION OF FLOWERS.—Among scientific discoveries, we may state that Dr. FASCAL, a chemist at Westeras, in Sweden, has announced to the Academy of Sciences at Stockholm his discovery of a process for preserving flowers in their natural condition. He sent, it is stated, some roses which he assures the Academy were prepared by him in 1844—and which have still all the appearance of being freshly gathered.

PREVENTION OF THE FOOT-ROT IN SHEEP.—Mr. Karkeek states "that the foot-rot is easily prevented by carting a quantity of earth in the form of a mound, in the center of the yard attached to the shed, upon which are occasionally strewed small quantities of slaked lime."

GRAFTING CLAY is best made of two parts cow-dung, three parts common clay, and one part awns or beards of barley or other grain, kneaded together thoroughly.

NIGHTSOIL, OR POUURETTE.

We were much disappointed lately in missing an opportunity to see the establishment gotten up in Philadelphia by Mr. Minor, the talented and persevering Editor of the *Rail-road Journal*, for the preparation of *Poudrette*. It was our wish to have seen it and to have obtained some particulars as to the scale and particular region of its operations.

We understand, generally, that his sales have been extensive and constantly increasing. Besides its being undoubtedly among the most powerful of all fertilizers, its materials being of the richest, it has, like guano, the great advantages of condensation, portability, and of not propagating noxious weeds. The excrement of birds is said to derive its value, in a great measure, from the fact that it combines the urine with it. While we throw away the offerings to that delicate Goddess, Cloacina, they "order things differently in France." There, as in Rome of old, the city government appoints their *curatores cloacarum urbis*; and thus the City of Paris derives a revenue of about \$200,000 for the privilege of permitting certain persons to collect and use the nightsoil of the city.

EXPORT OF GRAIN from the U. States to G. Britain and Ireland, from Sept. 1. 1846, to March 27, 1847.

| | | | |
|-------------------|-------------------|------------|-----------------|
| Wheat | bushels 1,273,882 | Rye | bushels 2,685 |
| Indian Corn | " 6,931,640 | Oats | " 144,069 |
| Barley | " | | bushels 130,071 |

PRICES CURRENT.

[Corrected, April 24, for the Monthly Journal of Agriculture.]

| | | | |
|--|------------------------|---|---------------------------|
| ASHES—Pots, 1st sort..... | \$ 100 lb. 5 — @ 5 06½ | Staves, White Oak, pipe, \$ M..... | 50 — @ — |
| Pearls, 1st sort, '46..... | — @ 6 50 | Staves, White Oak, hhd..... | 40 — @ — |
| BEESEWAX—American Yellow | — 26 @ — 26½ | Staves, White Oak, bbl..... | 30 — @ — |
| CANDLES—Mould, Tallow, \$ lb..... | — 11 @ — 12½ | Staves, Red Oak, hhd..... | 20 — @ 28 — |
| Sperm, Eastern and City..... | — 31 @ — 38½ | Hoops..... | 20 — @ 30 — |
| COTTON—From..... | \$ lb. 10½ @ — 14½ | Scantling, Eastern..... | 15 — @ 16 25 |
| COTTON BAGGING—American..... | — 12½ @ — 13 | Scantling, Oak..... | — 30 @ — 35 |
| CORDAGE—American..... | \$ lb. 11 @ — 12 | Timber, Oak..... | \$ cubic foot — 20 @ — 30 |
| DOMESTIC GOODS—Shirtings, \$ y..... | — 5 @ — 11 | Timber, White Pine..... | — 13 @ — 20 |
| Sheetings..... | — 7 @ — 15 | Timber, Georgia Yellow Pine | — 24 @ — 28 |
| FEATHERS—American, live..... | — 28 @ — 33 | Shingles..... | \$ bunch 1 75 @ 2 — |
| FLAX—American..... | — 7 @ — 8 | Shingles, Cedar, 3 feet, 1st quality..... | 26 — @ — |
| FLOUR & MEAL—Genesee, \$ bbl..... | 8 — @ — | Shingles, Cedar, 3 feet, 2d quality..... | 22 — @ 24 — |
| Troy..... | 7 87½ @ — | Shingles, Cedar, 2 feet, 1st quality..... | 17 — @ 18 — |
| Michigan..... | 7 87½ @ — | Shingles, Cedar, 2 feet, 2d quality..... | 15 — @ 16 — |
| Ohio, Flat Hoop..... | 7 87½ @ — | Shingles, Cypress, 2 feet..... | 13 — @ 14 — |
| Ohio, Round Hoop..... | — @ — | Shingles, Company..... | 28 — @ 30 — |
| Ohio, via New-Orleans..... | — @ — | MUSTARD—American..... | — @ — |
| Pennsylvania..... | 7 37½ @ 7 50 | NAILS—Wrought, 6d to 20d..... | \$ lb. 10 — @ — 14 |
| Brandywine..... | 7 37½ @ 7 50 | Cut 4d to 40d..... | — 44 @ — 4½ |
| Georgetown..... | 7 50 @ — | PLASTER PARIS—\$ ton..... | 2 87½ @ 3 — |
| Baltimore City Mills..... | 7 37½ @ 7 50 | PROVISIONS—Beef, Mess, \$ bbl..... | 11 75 @ 12 50 |
| Richmond City Mills..... | 8 50 @ — | Beef, Prime..... | 8 50 @ 9 25 |
| Richmond Country..... | 7 37½ @ 7 50 | Pork, Mess, Ohio, old..... | 14 87½ @ 15 — |
| Alexandria, Petersburg, &c..... | 7 37½ @ 7 50 | Pork, Prime, Ohio, old..... | 13 — @ 13 12½ |
| Rye Flour..... | 5 12½ @ 5 25 | Lard, Ohio..... | \$ lb. 9 — @ 10½ |
| Corn Meal, Jersey and Brand..... | 4 50 @ 4 75 | Hams, Pickled..... | — 8½ @ — 9½ |
| Corn Meal, Brandywine..... | hhd. — @ — | Shoulders, Pickled..... | — 6½ @ — 7 |
| GRAIN—Wheat, White..... | \$ bush. 1 70 @ 1 75 | Sides, Pickled..... | — @ — |
| Wheat, Red..... | 1 45 @ 1 55 | Beef, Smoked..... | \$ lb. — @ — 11 |
| Rye, Northern..... | — 95 @ — | Butter, Orange County..... | — 25 @ — 28 |
| Corn, Jersey and North..... | (meas.) — 93 @ — 98 | Butter, Western Dairy..... | — 18 @ — 20 |
| Corn, Southern..... | (measure) — 92 @ — 95 | Butter, Grease..... | — @ — |
| Corn, Southern..... | (weight) — @ — | Cheese, in casks and boxes..... | — 7 @ — 8 |
| Oats, Northern..... | — 49 @ — 50 | SEEDS—Clover..... | \$ lb. 6½ @ — 7 |
| Oats, Jersey..... | — @ — | Timothy..... | \$ tierce 17 — @ 21 — |
| HAY—North River in bales, \$ 100 lb..... | — 60 @ — 65 | Flax, Rough..... | — @ 11 50 |
| HEMP—American, dew-rotted..... | ton 140 — @ 160 — | SOAP—N. York, Brown..... | \$ lb. 34 — @ 54 |
| " " water-rotted..... | — @ 230 — | TALLOW—American Rendered | — 84 @ — 9 |
| HOPS—1st sort 1846..... | — 8½ @ — 9 | TOBACCO—Virginia..... | \$ lb. — @ — 6 |
| IRON—American Pig, No 1..... | — @ 32 50 | North Carolina..... | — @ — |
| " Common..... | 22 50 @ 25 — | Kentucky and Missouri..... | — 3 @ — 7 |
| LIME—Thomaston..... | \$ bbl. — 85 @ — | WOOL—Am. Saxony, Fleeced..... | \$ lb. 35 — @ 37½ |
| LUMBER—Boards, N.R., \$ M. ft. cbr..... | 30 — @ 35 — | American Full Blood Merino..... | — 32 @ — 34 |
| Boards, Eastern Pine..... | — @ — | American ½ and ¾ Merino..... | — 27 @ — 30 |
| Boards, Albany Pine..... | \$ pce. — 10 @ — 18 | American Native and ¾ Merino..... | — 25 @ — 27 |
| Timber, Georgia Pine..... | \$ M. ft. 27 50 @ — | Superfine, Pulled..... | — 30 @ — 32 |

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NO. 12.

INDIAN CORN :

WHAT IS KNOWN AND WHAT IS WANTED TO BE KNOWN ABOUT IT.

"Fell Famine sickens at the o'erflowing good,
And, hissing, flies the native land of food."

If any should ask what is our warrant for encouraging inquiries like the following from a correspondent, we answer : 1. The duties that belong to our very position. 2. That volume on volume may be produced to show that for the *last thirty years* we have been instigating inquiries on every branch of agricultural industry ; and, 3. As to this particular subject, as far back as March, 1822—twenty-five years ago—a friend in Massachusetts made a call upon us, saying : " I beg leave to inquire in behalf of myself and others, of you and your correspondents, what is the relative value of barley, buckwheat, *Indian corn*, oats and rye, as food for hogs, horses and neat stock. Satisfactory answers would enable us to ascertain what particular part of our surplus produce might be offered for sale consistently with good husbandry."

In publishing the above inquiry in the *American Farmer*, we remarked : " The object at which our correspondent aims is, we think, entitled to the notice of *Agricultural Societies*. They might call for and reward the most judicious sets of experiments connected with the subject ; and we persuade ourselves to believe that it is within the power of any one of these Associations to command satisfactory and useful answers to these questions ; but meanwhile we would very gladly receive such information in the case as any of our readers may be disposed to furnish."

Such were our published sentiments in 1822—such are they in 1847. The references and extracts which we shall now make are not intended to show that anything new can be said on the mere practical part—the cultivation—but they will show what progress *has since then* been made in the application of sciences to these subjects. We have no longer to inquire in vain for the relative value and nutritive properties of wheat, corn, rye, barley, &c. Thanks to the votaries of science and the "book knowledge" they give us.

Extract of a Letter to the Editor of The Farmers' Library.

" The calculation is that we shall raise this year five hundred millions of bushels of corn, and if so, then there will be four hundred and ninety-nine millions of bushels of ears thrown away. Now the question of whether cobs are of any value or not ought to be settled. You know that corn-blades are considered of more value than hay at the South for their race-horses ; and our farmers here feed blades and stalks to their cattle, and some few

also grind the cob and say it has a value—that it is worth five or six cents a bushel; others say it is of no value. It is a shame that neither the cob, husks, blades or stalk have been analyzed; all should be tested to see if there is any nutritive matter in either, and what per cent. The ashes, also, should be analyzed to see the kind of salts taken from the earth in raising corn, so that the proper manure can be supplied to raise the largest quantity per acre. I wish you could persuade Mr. Teschemacher to undertake this investigation. I know of none connected with Agriculture of more interest. Suppose that the cob, for nutritive value, is worth but two cents per bushel, we can save ten millions of dollars per year."

When it is considered that Indian corn constitutes one of our most important staples, that it is produced in a single State to the value of more than \$11,000,000, and that it is cultivated more or less over the whole extent of the United States, it will be admitted that every new question that can be raised about it ought to command attention. Hence we heartily agree with our respected correspondent, that the interests of American Agriculture demand that every part of this noble plant, which should emblazon our national arms rather than the *bird of prey*! should be thoroughly analyzed in all its parts, and the results presented in every aspect that may serve to illustrate its value. We will venture to say that any plant occupying in Europe, as maize does in America, the front rank in the catalogue of vegetable diet for man and beast would have been long since subjected to all the tests that vegetable chemistry could apply. Thus we should have learned, with as much exactness as science could determine, the sort of manures most congenial to its growth; how much, for example, of potash, lime, magnesia, phosphates, silica, &c., a crop of any given number of bushels carries off from an acre of land, and how much of these are appropriated respectively to the different parts of the plant—its leaves, grain, husk, cob, &c.—and, finally, how much there is of nutriment for man or beast in a given quantity of all these parts. The question now raised is as to the *value of the cob*; a question of palpable importance when we consider that they will amount this year, probably, as stated by our correspondent, to 500,000,000 of bushels, unless it be that the crop may be greatly diminished, as in the year 1816, by the very cold weather of the spring so far—for it is known to be a plant that, of all others, delights in heat and moisture.

But there are other points in the physiology and value of this grain, besides the virtue of the cob, that require to be elucidated; and here we may be allowed once again to remark on the slow progress of Agriculture as compared with other manufactures, for it is in reality a *manufacture of food* out of raw materials, worked and manipulated by hand and animal and other powers. See in the meantime what improvements have been made in glass, iron, paper, in printing, and, in short, in all other arts and manufactures! In studying the causes of this difference, the history of Agriculture as well as of these other arts and manufactures, points to our neglect, in all our schools, of chemistry and of mechanical philosophy in their obvious relations to Agriculture. May we hope that a "better time is coming?" But to return.

What we want in reference to Indian corn, over and above an exact knowledge of the constituents and nutritive value of the *cob*, is to have, as before said, *all its parts* analyzed—and the blades, both in their green and in their cured state. It is too much to be desired that we should know the weight that each part of the plant will yield on an acre, in proportion to any given measure or weight of grain. How else can the farmer tell the quantity of nutritive matter, and hence the value of the product of his labor and capital when applied to corn, in comparison with other crops? By the analysis made by Societies and other Institutes, and by scientific and public spirited men in Europe, especially by order of the Duke

of Bedford, all these questions have been solved in respect of all their staple crops—grains, grasses and vegetables: so that not only their weight and constituent elements in a dry and green state are known, but it has been ascertained, as we can show, how all these different sorts of food contribute—some to the secretion of milk, some to the formation of bone, others to the production of fat, muscle, &c.

All this has science lately developed for Agriculture in Europe, recording the results in books within our reach, forming the “book knowledge” so much derided by some very wise people—in their own conceit. Even our own great staple, Indian corn, which dire calamity has forced on the people of Europe, we shall see, in the sequel of these remarks, has been there somewhat more thoroughly analyzed already than in our own country. Why is it that with all our Institutes, Societies and Associations, we are thus left to trans-Atlantic lights for information? How much more honorable would it be to kindle the lamps on our own altars, instead of wasting our means to have it shown once and again that certain things in the way of large crops and fat beasts can be effected which have been done ten thousand times before? Rather, say we, let the new lights which Agriculture, yet more than other arts, requires, be anxiously sought for; and to that end let a scale of liberal rewards be framed with due study and circumspection, for those who will find and exhibit these new lights for its farther improvement. In this case of Indian corn, however, it is not so much that we need experiments to be made in its cultivation as that certain other facts be ascertained.

The plan should be to take any single acre of good fair yield—say 60 bushels, more or less; and then, what it is desirable to know is—first, How much the land which produced that given quantity of grain yields, also, in bulk and in weight of *cobs*,* and in weight of *shucks*, tops, blades and stalks, suppose the “tops” to be cut off above the top ear, as usual. We will presently show why these facts, as respects the tops, blades and shucks of corn, are of great importance as sources of national wealth—ay, as furnishing, *in themselves*, a claim to influence in our national councils far beyond the whole stake of certain other classes who *cause themselves* to be respected and cared for.

To come to the point, then. We would respectfully suggest that the American Institute, or the Agricultural Association, or the State Agricultural Society, should nominate some two, or at most three, well known and respectable farmers in States wide apart, to whom should be offered a prize of \$100, or its equivalent in plate on which this king of plants should be engraved—giving them instructions to take a fair average acre of corn land, and very accurately weigh and measure the grain, and weigh the blades, tops, shucks and stalks. Though we are aware that in many States the whole is cut off at the root, and the blades not separated from the stalks and tops, yet it is desirable that for this experiment it should be done, especially in the southern States, where the system is different, and where the blades are cured and fed separately from the other parts of the plant. The practice is, when the blades are ripe and before they get too dry, to pull them from the stalk up to the topmost ear, cutting off the “tops” just above the topmost ear, and saving and feeding them separately. Some experiments of Mr. Ruffin showed some diminution in the weight of the grain from cutting the tops before the grain was fully ripe, and the philosophy of the

* This, as relates to the proportion between the grain and the cob, has since been done by Mr. Colt, as the reader will presently see.

case would warrant such a result. We have not his invaluable "Farmers' Register" to refer to; but, perhaps from the prejudice of early associations, we confess to a partiality for the old and still very much the southern practice of pulling and carefully curing the blades and cutting the tops, without undertaking, however, to decide upon and recommend the practice on the score of actual economy. It is only by thus offering adequate inducement that we can prevail on some reliable farmers to establish all these facts by careful experiment, making the quantity of grain the standard of reference and comparison; and that we can get to know with sufficient accuracy how much there is of food and manure to be had in the *whole plant*, from a given measure of land, and be thus prepared to measure the aggregate value of all that our capital and labor produce when bestowed on this crop.

As before intimated, this is not one of the cases that admits of a premium to excite competition. The object is simply to come at certain facts of plain and obvious importance, the ascertainment of which requires care and zeal, and, at the same time, involves a degree of pains and expense that could not fairly be expected without adequate inducement. There is no need, however, of setting one hundred to doing what one can do as well, and when only one can be compensated for the trouble.

Does any one believe that a merchant or manufacturer, interested in a matter connected with his business to the amount of the value to the farmer of any one of these items, would rest until he had ascertained precisely how it bears on his *balance sheet*? Why, we will venture to assert that the millionaires, proprietors of the great Middlesex manufactory at Lowell, can tell how much a gallon more or less of oil on the gudgeons of their machinery, or one mill in the price of wool, adds to or diminishes the cost of a yard of their cloth!—And here we take leave to protest against the temper evinced by a member of the New-York Farmers' Club, when this question of the value of the cobs of Indian corn was raised there not long since, whereupon he, according to the uncontradicted reports of the papers, remarked, with more flippancy than discretion, that the best way to determine their value was to throw, at once, the grain and the cobs to the hogs for their decision! For one we feel indebted to the author of the problem for urging it on the attention of those whose province it is to illustrate all such questions. But as there is a vast difference in the relative proportions of grain and offal, or fodder, incidental to a given measure of corn in different latitudes, these measurements would require to be made in the South or West, as well as in the North or East. Two, or, at most, three points, however, would answer for the establishment of data to rectify and guide practice throughout the country. It is quite probable, for example, that no stalk of the corn of Mr. LATHROP of Springfield, Massachusetts, which yielded one hundred bushels to the acre, in the list given in the next chapter, was higher than Hon. JOHN WENTWORTH in his stockings; whereas that which, in Kentucky, gave Mr. WILLIAMS one hundred and fifty-eight bushels could probably not be reached by old Rough and Ready, with the point of his sword, seated on his war horse.

We were informed by a correspondent in Dorset County, Maryland, in 1828—(see *American Farmer*)—that he grew several acres of corn eleven feet high; and in the same journal, in 1830, there is a statement of a stalk of corn then growing on the farm of Andrew Clark, of Columbus County, Pennsylvania, measured by Col. Jos. Paxton in the presence of Joshua Loyd, of Ohio, and David Clark, of Columbus, Pennsylvania: "Hight of stalk, from the surface of

‘the ground to the top, without erecting the top blade, 14 feet 6 inches; circumference of the stalk between the joints, the blade stripped off, 7 $\frac{1}{2}$ inches; length of blade, put out 8 feet from the ground, 4 feet 1 inch; breadth of ditto, 7 $\frac{1}{2}$ inches.’ Col. Paxton had no doubt it would reach the length of 17 or 18 feet, as no tassel had then made its appearance.

All these facts go to show the propriety of having several measurements, and that the same system of gathering and curing the corn and fodder may not suit all latitudes alike.

We would therefore suggest, with all deference, to the American Institute to offer two or three premiums of \$50 or \$100 each, to be placed in the hands of gentlemen of known character and zeal in the cause, living in latitudes wide asunder—say with Presidents of Agricultural Societies in Massachusetts and Virginia, Tennessee, or Kentucky, or Ohio—to be by them offered to some practical farmer of their acquaintance, who might be relied upon to take this matter in hand *con amore*, and let us have the exact quantities, as here set forth, of *all parts and substances* pertaining to an acre of Indian corn of average product of grain; for once knowing that a given amount of these different substances was incidental to a given amount of grain, a man would only have, ever after, to ascertain how much grain he made to know, with sufficient exactness, how much and what was the value of all the rest of the crop.

There are rules laid down for determining how much grain a given space filled with the ears will yield. The first we remember to have seen was by BORDLEY, (in his “Husbandry,”) one of your book farmers again, who, though himself not successful, did more good to agriculturists, by causing them to *think*, than fifty of your “practical men” who come along in the wake of mechanical and scientific discoveries, and grow rich on the practice of theories they once denounced. A correspondent, referring to Bordley, says: Multiply the length, depth and width together; the solid measure multiply by 8; the quotient will be about one per cent short. Take any box, therefore—say 3 feet square and 2 feet deep— $3 \times 3 = 9 \times 2 = 18 \times 8 = 144$ bushels and a fraction. The following is given in the American Agriculturist as from the Western Cultivator:

TO MEASURE CORN IN THE EAR.—In a bulk of corn in the ear, measuring 12 feet long, 11 feet broad and 6 feet deep there will be 316 bushels and 8-tenths of a bushel of shelled corn, or 633 bushels and 6-tenths of a bushel of ear corn, as:

$$\begin{aligned} 12 \times 11 &= 132 \times 6 = 792 \times 4 = 316.8 \\ 12 \times 11 &= 132 \times 6 = 792 \times 8 = 633.6 \end{aligned}$$

The decimal 4 is used when the object is to find the quantity in shelled corn, because that decimal is half of the decimal 8, and it requires two bushels of ear corn to make one of shelled corn. In using these rules a half bushel should be used to every hundred, that amount of error resulting from the substitution of the decimals.

There is a considerable difference, however, between different species of corn. The Editor of The Farmers’ Library well remembers that his father, who was always a corn-seller, in old Calvert County, Maryland, and cultivated the yellow gourd-seed, taking pains to select for seed perfect ears having the greatest number of rows, always demanded pay for *six* bushels for every ten bushels of ears measured into an ox-cart, as was the fashion, and if the gentleman hesitated he had it shelled to satisfy him.

Just as we had written thus far, we received a letter from R. L. COLT, Esq., of Paterson, who states—“As you requested, I took one bushel of best kind of Jersey corn in ears, carefully shelled it, and had half a bushel and six quarts of shelled corn and a heaped half bushel of cobs; so, for all practical purposes, you can say that a struck bushel of shelled corn will furnish a heaped bushel of cobs.

I know a clever man who tells me that 100 pounds of corn cobs will give as much whisky as 100 pounds of potatoes. The half bushel of cobs weighed 7 pounds; a bushel of cobs, of course, 14 pounds; and, of course, the 500,000,000 bushels that will be made this year will be equal to about 35,000 tons."

Now, simple, and yet important, as these facts are, and easy of ascertainment, we do not remember to have seen them stated before, though they may have been. We now know, nearly enough for all useful purposes, the measure and the weight of cobs from an acre of corn that gives a certain quantity of grain. A crop of 100 bushels of shelled corn gives 100 bushels, and 1,400 pounds weight of cobs. Very well, then, as the sailor says, "belay that," and let us proceed. We still want (except as we shall hereafter show the information to have been partially supplied) the weight and the analysis of the shuck perhaps even more than of any other part, for the reason that this particular part of the plant seems to have been altogether overlooked, as far as we are aware of, while we know that most farmers in Maryland and Virginia, and farther south, depend very much on it as winter provender for their *cattle*, esteeming it to be more nutritious and valuable than wheat straw. Why should it not be as carefully analyzed as straw, or any of the grasses, and its weight per acre be ascertained?

Mr. Leake, of the Pedee Agricultural Society, South Carolina, some years ago reported that "an acre of corn, when first cut for fodder, weighed 156,816 pounds—over 70 tons—and that when thoroughly cured for forage, the same weighed 27,297 pounds—over 10 tons. It was thought the dried forage would have been something more had not the corn been cut too early." From his using the term *cut*, we suppose he included the top blade, stalk and shuck. Mr. Tucker, in his "Progress of the United States," reckons 20 pounds of *blades* to a bushel of corn. 25,000,000 acres, which it would take to yield 500,000,000 bushels, at 20 bushels to the acre, would then give 250,000,000 tons; but suppose the average yield of corn fodder, including the cob and shuck, to be but 3 tons to the acre, instead of 10 tons, and the value to be but 20 cents a hundred, or \$4 a ton, and we have \$300,000,000 as the value of our corn fodder alone—is it too much to assume that it is worth that, if we add, for deficiency, the crop of beans, peas, feathers, sumac, broom-corn, honey and flax-seed, omitted in the Census? What intelligent farmer would be at a loss to get the value of 20 cents out of every 100 weight of corn fodder? Judge Buel tells us of a Vermont farmer who pronounced the corn fodder of any acre of land to be equal in value to the *hay* that the same land would produce; and he himself says he carried his cattle through the winter on corn fodder in as good condition as on hay. In an address to the Maryland Agricultural Society, we remember it to have been stated by its then President, Hon. ROBERT SMITH, a polished scholar and gentleman of the good old school, and the most popular Secretary of the Navy we have ever had, that corn-stalks, instead of "wasting their sweetness on the desert air," might, if well cured, be cut up and steamed, and made nourishing food for cattle through the whole winter.

Surely it were superfluous to insist that the facts which these measurements and analyses of corn fodder and corn cobs would bring to light would be of great value, not merely for the practical guidance of the farmer, but for the use of statistical writers in their expositions of our national industry. To him who confessedly stands among these in the front rank, Professor TUCKER, we are indebted for an observation in his "Progress of the United States," sufficient of itself to demonstrate at once the great value of the *blades* alone of the corn plant, and

the glaring oversight and neglect to make any mention in the Census of such an important item of agricultural contribution to the natural resources—an oversight that will continue, in a thousand forms, to characterize the proceedings of the Government and to degrade the landed interest until farmers shall manifest more self-respect, and cease to have their eyes blinded by the filth or dazzled by the glittering spoils of party.

“It is proper to remark,” says Professor Tucker, “that the Census omits several [agricultural] products whose aggregate value would make no insignificant addition to the total amount. Among these are: 1. Blades of Indian corn, an excellent fodder for horses and cattle, and which, estimating twenty pounds for every bushel of grain, amounts to 3,775,000 tons, worth \$37,750,000. 2. Peas and beans. 3. Flax-seed. 4. Broom-corn. 5. Sumac. 6. Honey. 7. Feathers.”

Supposing, then, the estimate of 500,000,000 bushels for 1847 to be correct, and our crop of corn blades alone would be five millions of tons weight, which at 50 cents a hundred, or \$10 a ton, would amount to \$50,000,000.

Here, then, we have in a single item of agricultural produce not even alluded to in our national exhibit of the sources of our wealth, an amount about equal to the whole product of mining and fishing industry in 1840. The annual product of our agricultural industry, by the last census, including the items which, as we have seen, are altogether omitted, was not short of \$700,000,000, taking the Census to be correct; that of the mining interest, including iron and coal, \$42,358,761—the farmer contributing more by 16 to 1 than the iron-master and the coal monger; and yet we will venture to say that the voice of the latter classes is heard sixteen times as far and as quickly, and has sixteen times as much weight as the farmer’s with our Representatives of the landed interest in Congress! And is it to be wondered at, since not a single Society can be persuaded to move, or a paper be prevailed on to assert their political rights, *as a class*? But let us return to the point from which we started, to wit, the necessity there is for a more thorough examination into the value of the *cob* of Indian corn, to ascertain and compare its nutritive and its fertilizing properties.

In referring to the American Institute we reckon with confidence on the public spirit, the enlightened views, and the great pecuniary and intellectual resources of that national and popular Institution to take up all such questions with avidity, and referring them, with ample remuneration, to men of known competence and appliances for their examination, they will not only retain their popularity, but acquire what yet more they covet, solid and enviable renown for having added essentially to the knowledge and capabilities of the agricultural community. It is in this confidence that though urged again and again to refer this and other kindred subjects, if necessary, to particular persons, of undisputable excellence as men of science, with sometimes liberal individual offers of pay for the analysis, we have not felt that we could send abroad for information, without implied insensibility to the adequacy of institutions on the spot, which pride themselves on their adaptation to the performance of such service to American Husbandry, and their readiness to render it. We should not fear to be reproached for overrating their means or their disposition, even were we to proclaim that either of these Institutions to which we have referred will undertake to have analyzed any substance that may be sent to them for that purpose, sanctioned by an Agricultural Society as to its important bearing on the general interests of Agriculture; for if (as ought not to happen) such substance should have been previ-

ously analyzed, without the fact being known to such Society, the answer would be but a reference to the result of such analysis already made.

Were it possible to give to the problem in this case, or any other agricultural question, a *warlike* attraction, to connect it in any way with the shedding of human blood and the shouts that follow as it flows; could we, as in the case of the "*gun cotton*," raise the question whether corn cobs could not be rendered as combustible and destructive as cold steel or gunpowder, then should we bring it, forsooth, within the pale of the Constitution, and every head of every department of the Government might easily be put in requisition, as in that case, with the Chief Magistrate in front, to lend the sanction of his name and scholarship to the results of analytical investigation in every form that the science of the military schools could suggest. In sober earnestness, and for the benefit of Agriculture, we really wish that some speculative genius would get out a patent for turning corn cobs and corn shucks into munitions of war; for then before the 4th of July we should learn more of their real substance and proportions than for the vulgar uses of Agriculture will be found out in the next forty years.

In the mean time we must endeavor to hold up some of the lights which have already been elicited by scientific and public spirited individuals at home and abroad. Exactly twenty-eight years ago we published the very interesting paper which follows, on the distillation of the meal of Indian corn and cob, as compared with that of the grain alone, and on the advantages of grinding both together as food for horses. It was from the pen of Peter Minor, of Albemarle, Virginia, a man of rare acquirements and usefulness, whose modesty was equaled only by his merit, and was addressed to that eminent agriculturist and philanthropic citizen, General John H. Cocke, Vice President of the Society.

Ten bushels of the corn and cob ground together were taken, which weighed 367 lbs., and ten bushels of pure corn meal were taken, which weighed 400 lbs. They were both brewed or mashed on the same day, and distilled separately, with great care and accuracy. The product of the pure corn was 18 gallons, and the product of the mixture, or corn and cobs, was 13 gallons of spirit, each of the same degree of proof. Now, it is generally agreed that the cob constitutes about one-half of the bulk of corn; in other words, we give two measures in the ears for one shelled, and the cobs are either used as fuel or thrown away as of no value. If this were true, the product of the mixture then should have been only 9 gallons, which is the half of what the pure corn produced. But 13 were obtained, 4 of which must have been, of course, extracted from the cobs; or if we estimate its nutritive power by the quantity of spirit, it is clear that whenever we shell ten bushels of corn, and throw away the cobs, we throw away a portion of food equal to the difference between 9 and 13, or nearly one-half.

As it relates to the respective weight of each, the difference in favor of the mixture is still greater, the pure meal being more than three pounds heavier in the bushel, and I am inclined to think that the product of the mixture would have been greater if the experiment had been made earlier in the year, before the cobs had lost much of their substance by evaporation, (my experiment was

made in the month of March.) The distiller mentioned an important fact that occurred in the process. He found that the fermentation of the mixture took place much sooner and was perfected a day or two earlier than the other. His expression was that it mashed much easier and better than anything he had tried before, and which he accounted for by supposing that the particles of the cob being lighter and coarser than those of the grain, but mixed together, prevented too close and heavy a deposition of the mass at the bottom of his brewing-tub.

These facts are particularly worthy the attention of distillers, and I think are perfectly satisfactory as to the value of corn cobs in the production of spirits. Whether they are equally so in relation to their value, as a food, is left to the chemists to determine. We are aware that the saccharine particles, or those yielding spirits, are not the only constituents of nourishment. We know that oily and mucilaginous particles are the component and necessary parts of food. But which preponderates, or in what proportion to each other they are required to exist, in order to constitute a healthy food, I do not pretend to know. It is certain, however, that the latter two do exist, in some degree, in the cobs of corn; and since the experience of all who have tried it, concur in reporting it to be the most healthy mode of feeding corn, perhaps it will not be unfair to infer that they maintain a due and proper proportion to the

spirit. If so, the experiment must be satisfactory, and the conclusion I have drawn from it undeniable.

But besides the actual economy, there is another advantage in this way of feeding corn, which ought to engage the attention of every farmer. It is notoriously true that the unground grain of corn is heating to the stomach of all animals, and of difficult digestion, producing colic and other inflammatory disorders, particularly in horses, which tend greatly to shorten their lives. They are deprived of the benefits derived from the stimulus of distension, (so necessary to the proper health of all animals,) by being unable to eat a sufficient bulk to produce it before they become gorged. But when ground into meal along with the cobs, and mixed with cut hay or

straw of any kind, this necessary distension is produced, without any danger of disorders arising from eating too much. It is now eight years since I have been in the habit of feeding corn in this way, and out of six to ten horses which I have annually kept in that time, there has been but one case of sickness among them, which was a slight colic. Indeed, since I have lived in this country, which is now eleven years, there has been but one death among that description of stock on my plantation, and that occurred to a mare with a young foal, in a distant clover-field without having been fed for many weeks, and which took two or three days before it was known. This uncommon health of my horses I attribute in a great degree to the use of ground food.

Judge Buel, referring to and quoting this statement of Mr. Minor, remarked: "The cobs of corn undoubtedly contain much nutriment." "We have," said he, "besides [this proof from Mr. Minor], abundant testimony in the practice of eminent farmers, of the *utility of feeding cob meal to animals*, always mixed, we believe, with the meal of corn or oats;" and he published a note from Mr. Robert White, of Shrewsbury, N. J., who says, "A pretty extensive feeder in the Philadelphia market once told me that a bushel of meal made of corn and *cobs* was quite equal to a bushel of meal made of corn and *oats*; that his cattle thrived as fast on the former, and that they were stalled (cloyed) on it."

Does the reader require again to be reminded of the pertinency of these questions in their relation to his *substantial interests as a cultivator*? We should trust not. Does he not see at once that on the ground of right to voice and influence in the public councils in proportion to his contributions to the common stock of national wealth, the very offal of his corn crop gives him a title to weight in Congress equal to any other classes? We all know that while the results of mercantile and manufacturing and mining industry can be ascertained to a fraction, because those who follow it have the good sense to keep *exact accounts*, (and are always prepared and prompt to expose any attempt by men in authority to do them injustice;) in agricultural affairs, on the contrary, all is carelessness and guess work. Alas! farmers seem born to be chiseled on every score. And now, without farther digression, we proceed to

THE ANALYSIS OF INDIAN CORN—And, first, as to the *ash* of the cob, we find in our old American Farmer, 17th December, 1819, a writer under the signature J. M., and whom we cannot now identify, who says: "It may not be amiss to add, respecting the corn cob, that when burnt it will be found to yield a product of almost pure potash."*

Another correspondent of the same period says:

"CORN COBS COMPARED WITH PUMPKINS.—I have acquired a little smattering of chemistry and have analyzed the *cobs* of corn, and the small yellow pumpkin; the results are that corn cobs contain one-twentieth of their nutritive matter, and pumpkins one twenty-fifth of their weight of matter, nutritive to animals. If my analysis be accurate, it will then appear that farmers generally are in the habit of throwing away an article (*cobs*) preferable as food for stock to common turnips, and nearly equal to Swedish turnips," [meaning, doubtless, weight for weight.]

500,000,000 bushels of Indian corn will furnish, according to the exact proof supplied by Mr. Colt, 7,000,000,000 pounds, the one-twentieth of which gives

* 100 parts of the ashes of the following substances contain—wheat straw 9.2, oat straw 24.5, clover straw 26.6, of potash.
(1115)

35,000,000 pounds of nutritive matter now thrown away, which at 2 cents a pound is \$7,000,000.

Neither having at hand or being aware of any other analysis of the cob, as to its ashes or nutritive matter, we now submit for future convenient reference as well as present use, protracted as this dissertation has become, the following:

ANALYSIS OF THE GRAIN OF INDIAN CORN.—The only authentic American analysis that we are aware of is the following by Dr. DANA, published some years since in the New-England Farmer.

| | 100 lbs. of Corn. | Ruta-Baga. | Potatoes. |
|---|-------------------|------------|------------|
| | | fresh dug. | fresh dug. |
| Contain of flesh forming principles—gluten, albumen, &c. | 1.26 | 1 | 2.27 |
| Fat forming principles—gum, starch, sugar, woody fibre, oil, &c., | 88.43 | 13 | 24.34 |
| Water | 9 | 85 | 72 |
| Salts | 1.31 | 1 | 1.39 |

We give also the following from the American Agriculturist.

There are also two Tables in Thomson's Chemistry of Organic Bodies, published in London in 1838. That of Bizio was made as early as 1823—Professor Gorham's, we believe, somewhat earlier.

Analysis of 100 parts of Maize, by Gorham.

| | Fresh. | Dried. |
|---------------------|--------|--------|
| Water | 9 | |
| Starch | 77 | 84.599 |
| Zein (gluten) | 3 | 3.296 |
| Albumen | 2.5 | 2.747 |
| Gum | 1.75 | 1.922 |
| Sugar | 1.45 | 1.593 |
| | 94.70 | 94.157 |

Analysis of 100 parts of Maize, by Bizio.

| | 80.920 |
|-------------------------------------|---------|
| Starch | 5.758 |
| Zein (gluten) | 1.092 |
| Extractive | 0.945 |
| Zimome | 2.283 |
| Gum | 0.895 |
| Sugar | 0.323 |
| Fat oil | 7.710 |
| Hordein, (nearly like starch) | 0.074 |
| Salts, acetic acid and loss | 100.000 |

Lastly we give, from Johnston's Agricultural Chemistry, Tables, one of which embraces the "straw" or blade of this plant, grown on different soils.

Composition of the ash of the grain and straw of Indian corn (Zea Mais.)

The grain of maize leaves about $1\frac{1}{2}$ per cent. of ash—the straw from $2\frac{1}{2}$ to $6\frac{1}{2}$ per cent.

The Grain.—Few analyses have hitherto been made of the ash of the several parts of this plant. The only two analyses we yet possess of the grain are the following:

| | Fromberg. | Letellier. | U. S. | Bechelbronn. | Mean. |
|-----------------------|-----------|------------|-------|--------------|-------|
| Potash | 26.63 | | 30.8 | | 32.48 |
| Soda | 7.54 | | | | |
| Lime | 1.59 | | 1.3 | | 1.44 |
| Magnesia | 15.44 | | 17.0 | | 16.22 |
| Oxide of iron | 0.60 | | | | 0.30 |
| Phosphoric acid | 39.65 | | 50.1 | | 44.87 |
| Sulphuric acid | 5.54 | | | | 2.77 |
| Chlorine | 0.36 | | | | 0.18 |
| Silica | 2.09 | | 0.8 | | 1.44 |
| | 99.44 | | 100 | | 99.70 |

Straw.—Of the straw or stem of the maize, we have two analyses from plants grown on different soils. The ash of the several parts of this plant, however, and at different ages, must differ so much in composition that little can be inferred from the following differences as to the effect of diversity of soil.

Composition of the ash of maize straw, grown on two different soils in the neighborhood of Grätz. No. 1 on a soil formed from the debris of primary rocks, No. 2 on a mountain limestone soil.

(1116)

| | Hruschauer.—No. 1. | No. 2. | Mean. |
|--------------------------|--------------------|--------|-------|
| Potash | 14.46 | 4.78 | 9.62 |
| Soda | 39.92 | 12.69 | 26.30 |
| Lime | 4.93 | 11.00 | 7.97 |
| Magnesia | 1.84 | 11.44 | 6.64 |
| Oxide of iron | 0.90 | 0.73 | 0.81 |
| Phosphoric acid | 11.76 | 22.39 | 17.08 |
| Sulphate of lime | 1.01 | 1.37 | 1.19 |
| Chloride of sodium | 6.29 | 0.55 | 3.42 |
| Silica | 18.89 | 35.05 | 26.97 |
| | 100 | 100 | 100 |
| Per centage of ash | 2.30 | 6.50 | 4.40 |

Between these results we observe great differences both in the total per centage of ash left, and in the proportions of every one of the constituents which the ash contains. This is by no means unexpected, but it illustrates a fact to which I shall presently draw your attention more particularly, that our knowledge of the inorganic constituents of plants—of the functions performed by them in the several parts of plants—and of the proportions required most perfectly to perform these several functions—is yet in its infancy.

The crop of Indian corn varies, I believe, more than that of any other grain. Crops of nearly 200 bushels, an acre are recorded in some of the journals of the United States, but 60 bushels, each 60 lbs. is considered a good average return even in favorable districts. We have no accurate returns of the proportion which the weight of the straw and leaves bears to that of the corn of the same plant.

Sixty bushels of corn at $1\frac{1}{2}$ per cent. of ash

| | | |
|---|------------------------|--|
| would carry off the land 54 lbs. of inorganic matter, consisting of | | According to this analysis of Letellier, the ash of the maize corn consists almost entirely of the phosphates of potash, soda, and magnesia. |
| Potash and soda...16.6 | Phosphoric acid...27.1 | |
| Lime.....0.7 | Silica.....0.4 | |
| Magnesia.....9.2 | Total.....lbs. 54 | |

We will take an early opportunity of presenting some other views of the value of the Indian corn and other crops, not so much that anything we may say will be new or important in itself, as to impress on the cultivators of the soil the impregnable ground on which they stand, and the claim it gives them, we will not say to sue for, but to *demand*, a corresponding provision, in the laws of the land, for enlightening and benefiting their pursuit, as far and in full proportion as the Government undertakes to act at all for the protection and benefit of other interests, by surveys, Tariffs and *Schools*. If Congress can lay out 8 or 80,000 dollars, or one dollar, for maintaining military *schools* in which are taught all the sciences and foreign living languages, it can do the same for the art and business of Agriculture. If it can appropriate \$3,000 for collecting and disseminating agricultural knowledge in the shape of essays and statistics, it can do the same for having information diffused in schools and by lectures. Let our military schools be maintained and the country filled, as now, with officers qualified to take command and drill the volunteers in case of war. This will altogether, as experience shows, supersede the necessity of *keeping up large armies*. Our military, since the war with England, has cost us about \$500,000,000! Let four millions a year, or the proceeds of the public lands, be taken from or added to our military appropriations, and with that, in ten years, we might have provided for every country school in the United States teachers as well qualified to give instruction in agricultural chemistry, botany, geology, natural history, road making, bridge building, rural architecture and surveying and mechanics, as the Cadets at West Point are now prepared to give instruction in the art of war. What military operations derive in the field from scientific direction, Agriculture is deriving now from scientific direction in England and Scotland; and so it ought and so it *will do in this country*. The cultivators of the soil, who contribute four-fifths of the national wealth, have a right to demand this *more useful appropriation of their funds*; and what is more, they are going to do it; and the day is coming when no man will be considered a worthy member of an Agricultural Society, or of a legislative body, who does not heartily assist in this glorious work. There is not another class on earth who would not, before now, have been represented in Congress by men who would not dare give one dollar for military surveys and maps and drawings and schools, without exacting as much for *surveys and instruction in Agriculture*! But, thank God! who times all things for the best, the time is coming when justice and honor will be done to the plow as well as the sword. Will not the general press of the country give its aid and comfort to the good cause?

From every part of Ulster the middling and small class of farmers are leaving in hundreds for the purpose of seeking a future home on the other side of the Atlantic. The English and Scotch steamers carry out with them, weekly, immense numbers for Liverpool and Glasgow, the impatience to quit Ireland being so great that should a vessel not be ready to sail immediately from Derry for America, they set out with all possible speed for the above ports. We have been informed that within the last three weeks fully fifteen hundred persons have embarked at Portrush, the steamers on arriving there being scarcely able to take all the passengers offering.

[Londonderry (Ireland) Sentinel.

THE GREEN TWIG PEACH.

ROOT AND OTHER GRAFTING.

CLARKSVILLE, Va., March 1, 1847.

Dear Sir: The Green Twig Peach tree is put in care of my worthy friend, J. H. who will deliver it as you have directed. It is my humble opinion a fortune can be made in propagating it, more especially if inoculated like this, permitting the common Red to grow along with the Green Twig. I hope you will take occasion to open the box and see it, for I assure you it is something rare and beautiful. I found the fruit so delicious that it induced me to rear three hundred trees of this kind (now beginning to bear fruit.)

I fear your northern climate may not suit it as well as this, as it appears rather more tender than the red-limb peach. In the same box with the tree, I will put limbs for grafting, if Mr. Colt desires it. Let me tell him how: Dig up the roots of any young peach tree; cut them in lengths of 6 or 7 inches; split the proper end one inch as you cut them off. Take the limbs I send, cut them in shape of a wedge and insert them in these roots, bark to bark; mop around the insertion with a mop dipped in melted beeswax and rosin, not hot enough to injure; plant them $1\frac{1}{2}$ inches below the junction of root and graft, and 19 out of 20 will live. If you have young peach trees, it may be safer to graft to them.

The twigs I send are long enough to cut into several lengths for grafts, and all the ends are dipped in beeswax and rosin, to prevent the escape of sap, and thereby they will be much more certain to live.

I have for a long time been aiming to procure the best selection of fruit in the State for my own use, and take great pleasure in propagating the choicest kinds. My plan is this: When the grafts grow ten or fifteen inches long, I cut off a part and take from it buds and inoculate vines or trees of two or three years' growth. Nothing would please me better than to get a few twigs of the Black Tartarian Cherry; I have seen some notice of it in Browne's work on Trees, and have become anxious to have it. I find that cherries do best when grafted or inoculated on our common wild cherry.

Yours, sincerely, J. L.

JOHN S. SKINNER, Esq.

A MANUAL OF THE PRINCIPLES AND PRACTICE OF ROAD-MAKING, comprising the Location, Construction and Improvement of Roads (Common, McAdam, Paved, Plank and Rail Roads); by W. M. GILLESPIE, A. M., C. E., Professor of Civil Engineering in Union College.

THE work of which we have here given the title, has made its appearance very opportunely, as it was much needed for the very reasons given in the Preface:

"The common roads of the United States are inferior to those of any other civilized country. Their faults are those of direction, of slopes, of shape, of surface, and generally of deficiency in all the attributes of good roads. Some of these defects are indeed the unavoidable results of the scantiness of capital and of labor in a new country, but most of them arise from an ignorance either of the true principles of road-making, or of the advantages of putting these principles into practice. They may therefore be removed by a more general diffusion of scientific instruction upon this subject, and to assist in bringing about this consummation is the object of the present volume. In it the author has endeavored to combine, in a systematic and symmetrical form, the results of an engineering experience in all parts of the United States, and of an examination of the great roads of Europe, with a careful digestion of all accessible authorities, an important portion of the matter having never before appeared in English."

We gave an extract from it in our last number, and have only now to reiterate what we have so often urged, that these are the subjects which ought to be taught in our common schools as practical exemplifications of the mathematics which in some of them are taught, or pretended to be. How obviously does a thorough reform in the course of Common School education lie at the bottom of all rational ideas of the improvement and prosperity of the agricultural class!

"LIST OF PREMIUMS FOR 1847,"

OFFERED BY THE NEW-YORK STATE AGRICULTURAL SOCIETY—OBSERVATIONS THEREON.

We should be well pleased if we could give this list entire; but as it would occupy many pages, it would hardly be fair toward subscribers in other States, in which this journal circulates as much as in this, seeing that they can have no interest in the mere details—as, for instance, thirty or more premiums for "*Végétales*," and yet more for "*Field Crops*." Besides, these particulars are disseminated far and wide by the Society, through the agency of public journals and otherwise. But, for the information and, as far as found suitable, the government of other Societies, and for the satisfaction of general readers, we shall extract from the bill before us, with which we have been kindly furnished by the able Secretary, Mr. JOHNSON, such parts as may appear to be of most general interest, and as may serve an useful general purpose, in the way we have abovementioned—and, first, as to

MANAGEMENT OF FARMS.—It will be seen that the questions propounded, connected with these premiums, presuppose, and require, that the farmer who competes for them must be something more than a *mere man of routine*! To answer these interrogatories he must possess habits of thought and investigation. He must keep a register of farm operations, and an account of farm expenses. When farmers are generally prepared to answer such interrogatories, Agriculture may be considered already well advanced on the high road to successful practice as an intellectual calling. *So mote it be!*

We may not, in one number, spare the space which would be required for all the extracts we propose to make, nor will the object in view be in any measure impaired by deferring a portion, if that should be found unavoidable.

The exhibition, it will have been observed, is to be held at *Saratoga Springs* on the 14th, 15th and 16th September, and it would be well if one could be held there every year, in the midst of the season, when visitors from a distance would buy largely of choice things.

MANAGEMENT OF FARMS.

For the best cultivated farm of not less than 50 acres, exclusive of wood-land and waste-land, regard being had to the quantity and quality of produce, the manner and expense of cultivation and the actual profits:

| | |
|----------------------|------|
| First Premium | \$50 |
| Second Premium | 30 |
| Third Premium | 20 |

The persons making application for these premiums must submit written answers to the following questions. To all who furnish full answers to these questions, premiums will be given consisting of single volumes of the Transactions of the State Society, or sets of those volumes, according to the value of such reports:

SOILS, &c.

1. Of how much land does your farm consist? and of how much wood, waste and improved land respectively?

2. What is the nature of your soil and subsoil? Is there limestone in it? What rocks are found in it?

3. What do you consider the best mode of im-

proving the different kinds of soil on your farm? Of clay soil if you have it—of sandy soil—and of gravelly soil? Answer separately.

4. What depth do you plow? What effect has deep plowing had on various soils?

5. Have you made any experiments to test the difference in a succeeding crop, between shallow, common, or deep plowing?

6. Have you used the subsoil-plow? and what have been its effects on different soils and crops?

MANURES.

7. How many loads of manure (30 bushels per load) do you usually apply per acre? How do you manage your manure? Is it kept under cover? or are there cellars under your barns or stables, for receiving it?

8. What are your means, and what your manner of making and collecting manure?

9. How many loads of manure do you manufacture annually? How many do you apply?

10. How is your manure applied—whether in its long or green state, or in compost? For what crops, or under what circumstances, do you prefer using it, either in a fresh or rotten state?

11. Could you not cheaply essentially increase your supply of manure by a little extra labor?

12. Have you used lime, plaster, guano, salt, or any substance not in common use as manure? In what manner were they used, and with what results?

TILLAGE CROPS.

13. How many acres of land do you till? and with what crops are they occupied, and how much for each crop?

14. What is the amount of seed planted or sown for each crop—the time of sowing—the mode of cultivating, and of harvesting—and the product per acre?

15. What kind and quantity of manure do you prefer for each, and at what times, and in what manner do you apply it?

16. How deep do you have manure covered in the earth, for different crops and different soils?

17. Have your potatoes been affected with any peculiar defect or disease, and have you been able to discover any clearly proved cause for it, or found any remedy?

GRASS LANDS, &c.

18. What kind of grasses do you use? How much seed of clover, or the various kinds of grass, do you sow to the acre? At what season of the year do you sow—and what is the manner of seeding?

19. How many acres do you mow for hay, and what is the average product? At what stage do you cut grass, and what is your mode of making hay?

20. Is any of your mowing land unsuitable for the plow, and what is your mode of managing such land?

21. Have you practiced irrigating or watering meadows or other lands, and with what effect? What is your particular mode of irrigation, and how is it performed?

22. Have you reclaimed any low, bog or peat lands? What was the mode pursued, the crops raised, and what the success?

DOMESTIC ANIMALS.

23. How many oxen, cows, young cattle, and horses do you keep, and of what breeds are they?

24. Have you made any experiments to show the relative value of different breeds of cattle or other animals for particular purposes, and with what results?

25. What do you consider the best and cheapest manner of wintering your cattle—as to feed, watering and shelter?

26. How much butter and cheese do you make annually—from what number of cows, and what is your mode of manufacture?

27. How many sheep do you keep? Of what breed or breeds are they? How much do they yield per fleece, and what price does the wool bring? How many of your sheep usually produce lambs, and what number of lambs are annually reared? How much will your sheep or lambs sell for per head to the butcher?

28. What do you consider the best and cheapest manner of wintering your sheep as to food, watering and shelter? How many in proportion to your flock (if any) do you lose during the winter?

29. How many swine do you keep? Of what breed are they? How do you feed them? At what age do you kill them, and what do they weigh when dressed?

30. What experiments have you made to show the relative value of potatoes, turnips, and other root crops, compared with Indian corn, or other grain, for feeding animals, either for fattening or for milk?

FRUIT.

31. What is the number of your apple trees? Are they of natural or grafted fruit? and chiefly of what varieties?

32. What number and kind of fruit trees, exclusive of apples, have you? and what are among the best of each kind?

33. What insects have attacked your trees, and what method do you use to prevent their attacks?

34. What is your general management of fruit trees?

35. What other experiments or farm operations have produced interesting or valuable results?

(1120)

FENCES, BUILDINGS, &c.

36. What is the number, size and general mode of construction of your farm buildings, and their uses?

37. What kinds of fences do you construct? What is the amount and length of each kind? And their cost and condition?

38. To what extent are your various farming operations guided by accurate weighing and measuring? And to what degree of minuteness are they registered by daily accounts?

39. Do you keep regular farm accounts? Can you state the annual expense in improving your farm, and the income from it, with such precision that you can at the end of the year strike an accurate balance of the debt and credit? Would not this practice conduce very much to close observation, careful farming, and in the end, much improve our system, as well as better our fortune?

It is expected that these questions will be answered with precision and minuteness, the applicant submitting the information according to his best knowledge and belief, of the correctness of which an affidavit shall be made.

The statements must be sent, free of postage, to B. P. JOHNSON, Secretary, Agricultural Rooms, Albany, on or before the *first of December, 1847*.

EXPERIMENTS AND ESSAYS.

STALL FEEDING CATTLE.—Best experiment in stall feeding cattle or sheep. A full and detailed statement will be required. 1st. Weight and age of animal when feeding commences. The weight weekly during the process. 2d. The kind and exact quantity of feed and its value. 3d. The weight when slaughtered, and the price at which sold, and the account of profit or loss. 4th. Any other particulars that may be important to a full and complete account of the whole process. \$30

DRAINING.—Best experiment in draining. 1st. Statement of the situation of the land previous to the commencement of process—the kind and condition of soil. 2d. The method pursued, with a particular account of the expense. 3d. The result and increased value of the land, if any. \$10

TOP DRESSING GRASS LAND.—Best experiment. 1st. Situation of land and of soil. 2d. The kind, quantity and value of manure used. The manner of its application. 3d. The results—giving the increased product, &c. To be answered in 1848. . . . \$20

ROOT CROPS.—Best experiment on not less than half an acre. 1st. State of land previous to crop, and how manured. 2d. The kind, quality and value of manure applied, and in what manner. 3d. The kind of soil, and the manner of cultivation, with a detail of the expense. 4th. The result. \$10

Experiments in Fattening Animals on Indian Corn, to test its value for that purpose.

ON PIGS.

1. Lot of 10 pigs of about 100 lbs. weight each, in lots of 5; to be shut up between 20th November and 20th December, and weighed separately when put in—the weight to be registered, as well as the sex, breed and general characteristics of the pigs, and arrange them in the pen by sex, age and size; to be fed on Indian corn alone.

2. Weigh a quantity of Indian meal, and feed it at regular hours—to be cooked and fed two weeks, and the corn dry two weeks, alternating the feed every two weeks.

3. Have the pigs kept clean.

4. At the end of two weeks weigh each pig, and enter its weight, and make an account, to be entered, of how much all have gained, and upon how much feed.

* This question will be a poser to some who are esteemed among the best farmers in this State.

[Ed. Farm. Lib.

5. At the end of each succeeding two weeks perform the same process, and continue to do so for at least 12 weeks, and sum up the entire gain, quantity and value of the feed, the market value of the pork, and where marketed, at the time each of the pigs is slaughtered and disposed of.

A premium of\$25
For experiments in fattening the like number of pigs, under the same regulations as above, on any other kind of grain or vegetables.....\$25

The statements required, and everything connected with the experiment in each case, to be verified by the affidavit of the owner and at least one other person.

FARM DWELLINGS, &c.

For the best design, accompanied with plans, elevation and cost of construction, combining convenience, economy and good taste.....\$20

For the best design, accompanied with plans and cost of construction, of a piggery.....\$10

For the best design of a farm barn with plans and cost of construction, and out-buildings.....\$15

Competitors for the above premiums must forward their manuscripts to the Secretary previous to 1st of December, 1847. Free of postage.

The above premiums for experiments and essays will be open to citizens of other States, as well as residents of this State.

PREMIUMS ON CHEESE DAIRIES FOR 1847.

The number of cows not less than 20. B. P. JOHNSON, Chairman of Committee.

Special\$50 | Second premium.....\$30
First premium 50 | Third premium..... 20

The persons making application for premiums, must submit written answers to the following questions:

1. What is the locality of your farm, its elevation, and latitude?

2. How much land under cultivation? How much in pasture and in meadow?

3. What is the nature of your soil and subsoil?

4. What plants or grasses do you use for pastures? What for hay, and how are your meadow lands treated, and how much hay do they yield per acre?

5. How many pounds of milk from each cow? How many from the whole herd?

6. How many pounds of cheese to 100 lbs. of milk? The quantity of milk and cheese during the season? The quantity of milk and cheese to each cow?

7. At what time do you commence and close making cheese?

8. Do you rear the calves? Do you keep swine?

9. Is any food used besides grass and hay?

10. A particular account of the method of making cheese. The quantity of the cheese, and its price in market, and place where sold?

11. The number of cows milked? The breed of the cows and their age?

12. What difference is there in the quantity of cheese yielded by the same quantity of milk given by different cows?

13. Has any particular kind of herbage been noticed to have an influence in increasing the proportion of *cheesy matter* in a given quantity of milk? And what kind of herbage produces the most and best milk?

14. If any butter made during the season? State how much.

15. What are the principal causes which produce bad cheese?

16. State such other particulars as from experience and observation are deemed important, so that correct results may be obtained as to the best manner of managing a dairy.

It is expected that the questions will be answered with precision, and that all the operations of the dairy to be carefully noted during the season. The object of the Society is, to ascertain as far as practicable all that relates to

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the manufacture of cheese, the quantity of milk and cheese per cow, and the quantity of cheese from each 100 lbs. of milk, and the kinds of plants and grasses best adapted to producing milk for cheese; the best breed of cows, and the location of farms best adapted to the manufacture of cheese.

The statements presented must be verified by the affidavits of the competitors, and also by one or more persons who assisted in the dairy and is acquainted with the operations.

ON BUTTER DAIRIES.

The number of cows not less than 20. Hon. R. DENNISTON, Chairman of Committee.

First premium\$30
Second premium 20
Third premium 10

Persons making applications for premiums on butter dairies, must in all respects comply with the regulations required for cheese dairies, adapting their answers to butter instead of cheese.

Statements as to cheese and butter must be forwarded to B. P. JOHNSON, Secretary, Agricultural Rooms, Albany, on or before the 1st of December, 1847.

BUTTER.

For the best lot (quality as well as quantity considered) made from 5 cows in 30 successive days—25 lbs. of the butter to be exhibited.....\$25
Second best\$15 | Third best\$10

Compliance with the following rules will be strictly required of those who compete for these premiums, viz.: The cows to be fed on pasture, green corn-stalk fodder, or grass cut for the purpose, only. No grain, roots, or slops of any description, to be fed during the trial. The cows to be owned by the competitors, previous to the 1st day of February, 1847. The milk drawn from the cows on some one day during the trial to be accurately weighed and measured, and the result stated. A sample of at least 25 lbs. of the butter so made to be exhibited at the Fair at Saratoga, for the inspection of the Examining Committee. The particular breed of the cows to be stated, if known, and the method of making and preserving the butter. A certificate signed by the owners of the cows, and at least one other person who assisted in milking and making the butter, detailing the above particulars, will be required.

The Executive Committee believe that few if any premiums offered on neat cattle will result in greater benefit to the farming interest than those on the products of the dairy, providing fixed rules requiring uniformity of feed, be faithfully enforced. Let the regulations be observed, and an opinion approximating to accuracy may be formed by the public which of the several breeds of cows are the best for dairy purposes, and from those that prove the best farther improvements may be made.

Best 25 lbs. made in June.....\$10
Second bestCol. Tour
Third best Vol. Trans.
Best 50 lbs. made at any time.....\$15
Second best 10
Third best Col. Tour.
Fourth best Silver Medal.
Fifth best Vol. Trans.

The claimants for premiums must state in writing the time when it was made; the number of cows kept on the farm; the mode of keeping; the treatment of the cream and milk before churning, winter and summer; the method of freezing the butter from the milk; tho

quantity and kind of salt used; whether saltpe- tre or any other substances have been employed.

The butter offered for premiums must be pre- sented in butter tubs, jars or firkins.

CHEESE.

One year old and over.

Best 100 lbs. \$15 | Third best...Silv. Medal
Second best..... 10 | Fourth best..Wash. Let.
Fifth best.....Vol. Transactions.

Less than one year old.

Best 100 lbs. \$15 | Third best...Silv. Medal
Second best..... 10 | Fourth best..Wash. Let.
Fifth best.....Vol. Transactions.

Those who present cheese for the premiums offered, must state in writing the time when it was made; the number of cows kept; whether

the cheese was made from one, two or more milkings; whether any addition is made of cream; the quantity of rennet used, and the mode of preparing it; the mode of pressure, and the treatment of cheese afterward.

SILK.

| | | | |
|--|------|---|------|
| Best specimen manufac- tured (woven into cloth or ribbons) | \$15 | Best specimen of sewing silk, not less than 1 lb. of domestic growth..... | \$10 |
| Second best..... | 10 | Second best..... | 5 |
| Third best.....Col. Tour | | Third best.....Col. Tour | |
| Fourth best...Vol. Trans. | | Fourth best...Vol. Trans. | |
| Best specimen not less than 1 lb reeled silk, \$5 | | Best one-half bushel co- coons, 1847 | \$8 |
| Second best...Col. Tour | | Second best...Col. Tour | |
| Third best... Vol. Trans. | | Third best... Vol. Trans. | |

It must be gratifying to every one who perceives the advantages of diversified pursuits and products, to find this Society persevering in its offers of premi- ums for American *silk*. This should undoubtedly be one of our domestic pro- ducts, and would have been before now, if it had interested any other class of people half as much as it does the agricultural class. Of all people they have the least influence in halls of Legislation, not being qualified to compete where success too often depends on intrigue and log-rolling.

POTATOES.

For the best and greatest variety of seedling potato- es of approved varieties

awarded by the Committee, in their discretion, for choice fruits not enumerated.

QUINCES.

Best 12 quinces of any variety, \$3, and Down. cm. ed.
Second best

\$1, and Thomas's Fr. Cult.
Third best.....Thomas's Fr. Cult.

CRANBERRIES.

Best peck of domestic culture.....\$5
Second best..... 2

To be accompanied with a full description of the manner of cultivation, nature of soil, &c.

Any premiums may be withheld in the discre- tion of the Committee, if the samples exhibited are not worthy of a premium.

The fruit exhibited and for which premiums are awarded to be at the disposal of the Com- mittee.

Six volumes of Downing, common edition, and twelve of Thomas's Fruit Cult. will be

WINTER MEETING.

For the best new seedling variety of winter ap- ples, of decidedly superior quality and valuable for exportation—one dozen specimens to be exhibited— together with a history of its origin; a description of the growth, character and habits of the tree, and the growing of the fruit—such fruit to be adjudged by the Committee as of the first character for orchard purposes. Downing's book, colored plates. For the second best do..\$5, and Downing, com. ed.

The above new seedling variety to be sent to B. P. JOHNSON, Secretary, Agricultural Rooms, Albany, before the 15th January, 1848, for ex- amination.

For the best new fall seedling apple for all pur- poses, conditions and descriptions as above, \$5, and Downing, common edition.

Second best do. \$2, and Downing.

These last named to be exhibited at the An- nual Fair and show of the Society in 1848.

To indicate respectfully, and, he hopes, not presumptuously, his individual opinion of the particular utility of offering premiums for *seedlings*, the Editor of The Farmers' Library will ask to have added on his own account—for the best seedling potatoes as above, the last previous volume of the Cultivator; for a copy of the communication accompanying the premium which may be awarded for cranberries, the last volume of the Quarterly Journal of Agriculture; for best new seedling winter apple, the American Agriculturist; best seedling peaches, the Farmers' and Mechanics' Magazine; and for the best new fall seed- ling apple, the Genesee Farmer—all to be well bound, and to follow the award of the Society in each case. We select these as journals published in this State, devoted to the same cause that we are, and to show, as far as we know how, our good will toward all; for we are but so many bees working in harmonious zeal for the same hive. Such, at least, is our feeling.

DISCRETIONARY PREMIUMS—Will be awarded for articles of merit exhibited by *Mechanics*, in all the various branches, and it is hoped that a general exhibition will be made.

Plate will be substituted for money premiums in all cases, at the option of competitor.

And why not offer *agricultural and horticultural journals as premiums also*? Does not the interest of this great pursuit of the State and of the Union demand that such works, conducted with great labor and expense, should have, on every

occasion that it can be given, the countenance instead of the ban of associations, gotten up under the influence, be it said, of those very journals, and patronized by the State, expressly for the promotion of the very industry to which they are devoted? For all that is done by the Society of the State, the public would not know that there are men and journals within its limits that have been giving all their time and influence for the cause of Agriculture before these Societies came (under their influence) into existence. It is seen that *there are some works distributed by the Society*, and we doubt not selected with the best intentions; but would not the periodicals we have named above, as premiums, be also quite as useful in the whole cyclopedia of agricultural knowledge which they embrace, as any single work confined to a particular branch or subject—meritorious and valuable as these works doubtless are? What have Agricultural Societies in other States a right to infer, when they see the great State Society of New-York carefully excepting to and excluding all agricultural journals from their patronage? Everybody knows the vast influence of the press, and the incalculable advantages to all human pursuits, of having cast upon them, by the Press, all the lights that science and experience are constantly bringing forth; and who can wonder at the comparative advance and prosperity of all other pursuits, on which so many papers are shedding their light and knowledge, while *so few* are dedicated to the *cause of Agriculture*? Is it not, then, inexplicable that where a State Society, organized for the express purpose of concentrating and diffusing a knowledge of all useful facts and discoveries in Agriculture, and while it is, in fact, in other ways and forms, exerting itself to that end—using its funds in the distribution of books published on speculation—should yet interdict all patronage to journals got up and conducted at great cost, expressly to collect and publish periodically, exactly and exclusively, the very matter which is supposed to be most precisely adapted to the very ends for which the Society itself was instituted?—interdicted at least so far as that may be implied by passing them by and refusing them its countenance? Let it not be supposed that we are seeking to propitiate support for this journal. If, having liberal publishers at our back, and unrestricted command of whatever can throw light on American husbandry, and thirty years of constant devotion of time and pen, we cannot put forth a work that shall *deserve* the patronage of the friends of Agriculture, and particularly of Associations with funds to promote it, we shall never complain of its being withheld. What we have a right to ask is, that we may escape all hostility, as we sincerely and honestly endeavor not to give cause for it, in *any quarter*. We take pride in the consciousness that we aim at something higher than the little money that might be made by success at the expense of our colleagues in the good cause.

In this great "Empire State" the produce of Agriculture is valued at \$108,000,000, while that of her manufactures, commerce, mining, forests and fisheries, united, do not equal that sum. For the benefit of the landed interest, with an aggregate population in the State of near three millions, there are not more than some half dozen agricultural journals published at the cheapest rate, while for other pursuits, all combined less numerous and productive, there are not less than *two hundred papers published*; and yet the State Agricultural Society deems it inexpedient to give one dollar of the funds at its command for the distribution of any agricultural knowledge which may happen to take the form of a *periodical* the especial province of which is to watch for and proclaim all valuable discoveries in agricultural philosophy, machinery and practice!

Let any man for a moment run his eye over the Index of one of these journals (which we offer as premiums) for a single year, and say which is likely to conduce most to the true welfare and dignity—ay, and if it must be so, to the *strong box*—of any family—one of these volumes or a *one or a two dollar note*! Contrast for a moment the character and promise of the young farmer who would prefer and exert himself to get the *book* with the motives and impulses of him who would give preference to the *money*. In regard to which of these two would one augur the best? Which would a young FRANKLIN go for—the *knowledge* or the *dross*?

True, it may be said that he who gets the money may buy the book *if he chooses*. But would it not have a good effect for a great State Society to presume a preference for knowledge over all things, and even to *push it in the way* of those who need it, as the wisest of us do?

After all, we are far from meaning to undervalue the labors and the patriotic aims of this Society. On the contrary, we sincerely and disinterestedly honor its zeal, its industry, and, if we may without presumption add, its enlightened views. Profound care to do the best is obvious, as is also decided improvement in their regulations. We hope they will go on from year to year aiming rather at the public good than at popular applause; that they will endeavor more and more to encourage and reward the pursuit and the display of knowledge, rather than success in things that have become “stale as a tale thrice told,” and that derive their excellence from the corn-house or the swill-tub, rather than the skill and intellectual ambition of the successful candidate. We trust that their care to secure *impartial* decisions may be consummated by just awards, and to that end that they may effectually stigmatize and put down all juggling and management, and all indecent importunity of the judges—all collusions and combinations in the distribution of the offices of the Society, the bounty of the State, and the contributions of individuals. For it is only by such a high-minded course of management that any such association can escape from falling finally into contempt, disfavor and dissolution.

CREAM-CHEESE—HOW TO MAKE IT.

WE have often inquired how it is that only in the Philadelphia market do we meet with this agreeable variety of Cheese. Even there, formerly, in good old times, when there was but *one* place—“*Jo Head's*”—where the traveler was sure to meet none but gentlemen—Cream-Cheese manufacture was the monopoly of one old lady, who sold it low down the market on Wednesday mornings. Now it is there getting to be quite common in more senses than one.

The following recipe for making it is to be found in Delgaim's Practice of Cookery, p. 467. We do not know whether the proportion of cream may not be too small; but that may be increased at discretion:

“One pint of cream being mixed with twelve pints of noonday milk, warm from the cow, a little rennet is added; and when the curd is come the whey is poured off gently, so as to break the curd as little as possible. It is then laid on a cloth and put into a small sieve; the cloth is changed every hour during the day, and in twenty-four hours it will be fit for use. It may be served on a breakfast-plate, with vine-leaves under it, and will keep perfectly good only a few days.”

The price in Philadelphia for these Cheeses is 25 cents each; the size about that of the bottom of a dinner-plate, and about an inch or a little more thick.

URINE.—One hundred parts of the urine of a healthy man are equal to 1,300 parts of the fresh dung of a horse, and to 600 parts of the fresh dung of a cow.

THE GENUINE ARABIAN HORSE.

"Oh, give me back my Arab steed"

THERE are romantic associations with the very mention of the Arabian horse, in the mind of every lover of that noble animal. No animal has been described by writers with a freer play of the imagination. We recollect to have heard the celebrated Captain Riley portraying the figure and powers of one he saw in Arabia. In passing, he said, through a thicket, where the road was winding, the noble animal disdained to pursue its tedious serpentine course, but instead of instead of that, took a straight direction and *trotted over bushes* four feet high without touching them.

An interesting article might be made by a recital of the remarkable accounts of their action and endurance, some of them doubtless true as well as extraordinary.

One of the most particular and authoritative descriptions is probably the following from the Memoirs of Sir James Campbell:

The route of the caravan lay at first through the Great Desert of Syria, and then through the country of Hamah, the most celebrated in the world for its breed of horses; and this was a circumstance peculiarly agreeable to me, as I was desirous of all things to carry home with me a horse of that unequalled race. The purity of the breed is ascertained and preserved in this country with greater precision and facility, in consequence of the horses and mares, to the number of one hundred and upward, being uniformly held in common property, by a particular family or tribe. The line of succession is preserved with all the care and all the accuracy perhaps of a Welsh pedigree; and in the genealogical tree of the horse which I ultimately purchased, its descent was professedly traced to the famous black mare of Mahomed, and I had a certificate of the fact, subscribed by five or six sheiks, who have an obvious interest in keeping up the value of their breed of horses by this exactness in their pedigree.

It is on the mares, however, that the chief value is placed, and through them it is that purity of blood is most depended on. The sister of the horse which I brought home with me, was for sale at the time I made the purchase. I examined her with the greatest care, and could not detect a semblance of a fault in any one of her points. Like all the others of the race, she was under fifteen hands high; and the price put upon her by the tribe to which she belonged was 10,000 piasters, equal to £2,500 of our money. The value of the mare is always much greater than that of a horse of equal symmetry, from the idea of her greater influence in preserving the purity of the race. The price I paid for the horse, own brother to this mare, was 800

Venitian sequins, equal to about £400 sterling; and I am inclined to think it was not far out of proportion, according to their ideas, to the price of the other.

While I was yet in the district where these horses are bred, an agent arrived from the King of Prussia, commissioned to make purchases for His Majesty. He agreed with me in admiring the mare, and declared she was the handsomest animal he had ever seen. He was even willing to give the 10,000 piasters for her, but the tribe had come to the resolution of preserving her as a brood mare, and refused that sum when offered. It is to be observed, however, that there are two distinct races in the country, the noble and the common. Among the latter, many beautiful horses are often to be found, but they never possess those qualities in perfection for which the noble race of Arabia is so peculiarly distinguished—fleetness, wind, and bottom.

Here, too, I must observe that the horses brought from Barbary are not to be compared in any good quality with the noble breed of Hamah. Many of the Barbs have radical faults, and some of them are very ugly, goose-rumped, cat-hammed, and narrow-chested. The difference of the breeds was long unknown in this country, but now it is better understood, and a Barb I believe is seldom bred from.

I shall here mention a circumstance on the authority of persons in that country whose good faith and respectability I had no reason to doubt, as illustrating in rather a striking point of view the marked distinction between the different races of this noble animal, which are reared in the same district.

An Arab who had pitched his tent in a solitary spot of the desert, had occasion to

leave his family, with his stock of the common breed of horses and mares, for a single night. On his return to the place in the morning, he found that his family and his whole property had been carried off in the night. He was mounted on a horse of the noble breed, and of the highest qualities, and having a rifle with him, he set out alone in pursuit of the robbers. On coming up with them he found that their numbers were considerable, but he had reason to believe that they were not possessed of fire-arms, which proved to be the fact.

Approaching near enough to bring them within range of his gun, he fired and wounded one or more of them, and waving his hand he dared them to follow him. This they attempted, but found it fruitless. He then returned to the attack, and again succeeded in singling out one or two of them with his rifle. Once more they pursued him with the fleetest of their horses, but to overtake him was impossible. Thus he hung upon their rear, wounding and killing several of them, until he at length compelled them to restore the booty.

The accoutrements of the Arab horsemen are simple in their construction, and well suited to his wants. The saddle is generally large, and always easy to ride on. The straps are made of untanned leather, and are fastened without buckles. A ring is attached to the end of the girth, and another to a corresponding part of the saddle. Through these rings a strap is repeatedly passed, and drawn together with such force as to bring them near to each other, after which, the strap is fastened by twisting the ends round the part thus tightened. The saddle thus fixed is never displaced, and, indeed, seldom taken off, except for the temporary purpose of grooming, when it is again immediately replaced, although there be no intention of riding. Cruppers are seldom used, because they are not necessary to keep the saddle in its place, and because they never carry anything behind it. The shoes are a thin flat piece of iron, with a hole in the middle to keep the foot cool, something in the form of our common bar shoe, but extremely light, and even flexible, so as to yield with the foot when pressed upon a stone. The numerous diseases to which our horses are liable are scarcely known in these countries.

Sometimes, indeed, I have seen a lame horse, but upon inquiry, the cause was generally to be traced to some accident, either in a skirmish, or from riding violently, which they do without hesitation over the roughest ground. Although never a very timorous rider, I have frequently felt somewhat uneasy at the style in which they carried me over a country which the boldest rider in England would hesitate to follow. In going down a declivity not less, perhaps, than forty-five degrees, where stones as large as a table were scattered about in all directions, I was proceeding with some caution to guide my horse

over the difficulties of the ground, when an Arab called out to me, and I was induced ever afterward to follow the advice, "Give him his head, he sees the stones as well as you do."

Everybody has seen the Turkish bridle; they never use a curb, but the ring which is put into the mouth serves the same purpose; the bit, which is very light, acting so powerfully, by means of the lever attached to it, as to force the mouth open and keep it so; neither do they ever use the snaffle, or bridoon; I tried it in the hope of its easing the mouth, but to horse and rider it proved equally inconvenient. Although they use such powerful bridles, the Arabs ride with a heavy hand, so as to sustain the horse in advancing, and to curb him in action. This they are able to do very effectually, and in throwing the jereed it is absolutely necessary. Perhaps the most remarkable point about the Arabian horse is the extraordinary smallness of the head and mouth—so small, indeed is the latter that you would think they might use a common tumbler for a water-bucket.

The stirrup used by the Arab is singularly short, but the seat of the rider is not on that account the less secure, and it enables him, in rising on his stirrup to throw the jereed, or to strike a blow, to do it with an infinitely increased effect. The sudden jerk which is often given in these exercises to the stirrup-leather, makes it necessary to secure it much more firmly than we do. This is done by ten or twelve straps or thongs, and the stirrup, in place of being a narrow bar, is so constructed as to allow the whole foot to rest on a plate of iron reaching from the toe to some distance behind the heel, where it is sharpened so as to serve the purposes of a spur.

The Arab feels that his safety depends on the quality of his accoutrements, and this is a point to which his attention is constantly directed. In action they never dismount, so that when you see a horse during an engagement without a rider, you may conclude that he is killed or badly wounded. In the hands of a European unaccustomed to the habits of the Arab horse, unacquainted with the manner of treating him, the animal appears to be extremely vicious, but let the same horse be mounted by a native horseman, and he will be found to be gentle, docile, and obedient.

I need say nothing of the sabre, which is their favorite weapon, and is always light and handy, of a curved form, and of considerable strength, the best being made at Damascus. But the use of the jereed is not so much known: its length is about four feet, with a steel head, well-tempered and well-sharpened. It is used as a missile, and four of them are generally carried in a small case under the thigh of the horseman, so as to enable him to seize one of them very quickly, and the case is fastened to the saddle by loops behind and before.

AGRICULTURAL EDUCATION IN VIRGINIA

THE following correspondence is published to show the feeling which is beginning to pervade the whole country on the subject of a better and more *appropriate* education for all who are to follow the cultivation of the soil for a livelihood: and assuredly when we refer to the numbers employed in it, and the value of the products of agricultural industry, so much exceeding all other occupations combined, there can be no hesitation in admitting the right of the landed interest to its proportionate share of the public means for giving knowledge and efficacy to that most important pursuit.

JOHN S. SKINNER, Esq.:

WINCHESTER, May 5, 1847.

Sir: The undersigned have heard with pleasure that you have some idea of traveling through the Valley of Virginia during the approaching summer. Under this expectation they have been appointed by the Winchester Lyceum a Committee respectfully to solicit, while you are performing this tour, that you will spend a few days in Winchester, and deliver such lectures as you may deem best calculated to advance the great agricultural objects to which you have devoted so much of your time and mind.

The undersigned are of the opinion that no portion of Virginia, at least, presents a finer field for testing the usefulness of agricultural schools, either for the Normal or general purposes of education, than this neighborhood; and they feel satisfied that you are disposed to lend the weight of your name and great experience in giving an impulse to such undertakings, as well as to any measures calculated to develop the great farming resources of our Valley.

The undersigned take pleasure in advising you that the Winchester and Potomac Railroad Company tenders to you, on the occasion referred to, the privilege of traveling over their road without charge; and we assure you that no expense need be incurred by you during your visit here, nor your journey up the Valley, from which all our citizens must anticipate profit as well as pleasure.

It is likely that toward the end of June or the first week of July might suit your arrangements as the best time to be with us, as it certainly would be the most convenient to our farmers, whose harvests, at a later period, might forbid them the pleasure of making your acquaintance and listening to your views of the dignity and importance of a pursuit which mainly engages the capital and enterprise of the Valley.

We are, respectfully, yours, &c.

JOHN BRUCE, D. W. BARTON,
W. Y. ROOKER, ROBT. Y. CONRAD,
E. T. SMITH.

—
ANSWER.

Gentlemen: I have duly received your flattering invitation on behalf of the Lyceum, to spend a few days in Winchester *en route* through the valley of Virginia. Without feeling that I can yet positively engage to do so, I must beg you to make my grateful acknowledgments to those whom you represent. Twenty-eight years ago, then in infirm health, I traveled through that region on horseback, noting for publication in the *American Farmer*, what seemed most worthy of regard, in connection with its Agriculture; and now, after the lapse of so many years, it could not fail to be both interesting and instructive to survey it in the same connection; comparing its condition at that and at this time, and making such reflections on its advancement or decline as inquiry and observation might suggest.

I shall never forget the agreeable impression then made by the view of the beautiful farming country between Harper's Ferry and Winchester, including a detour through Charleston. Bearing in mind what has been done in other countries, I have no hesitation in saying that by a reasonably abundant and skillful application of capital and labor, the whole valley of Shenandoah ought, at this day, to be averaging forty bushels of wheat to the acre; for if we have in our country a district of land peculiarly adapted to the growth of the two great sta-

ples of the Union, Wheat and Indian corn, assuredly yours is that district. The same may be said of Frederick and Washington Counties in Maryland.

Permit me gentlemen, to quote you a single passage from the last number of "Personal Observations" by Rev. Mr. Colman, on European Agriculture.

"On the estate of the late Mr. Coke, afterward Lord Leicester—where, when he came to reside on his property, it was thought, on account of the *thinness and poverty of the soil, wheat would not grow*—the average yield is from forty to forty-eight bushels per acre; and I have already referred to a large farm where the crop on the whole farm, in 1844-5—a most favorable season—averaged fifty-six bushels per acre. These are most encouraging results; but since, beyond all question, in an instance referred to, eighty bushels have been produced, who will say that the limits of improvement have generally been approached? All this too has been, without doubt, the effect of *improved cultivation*."

And let me refer you also to the progress of agricultural improvement in Mid-Lothian, Scotland, as you will find it described in the next (July) Number of the Farmers' Library. When I add that all writers agree that these great improvements, and average increase of fertility have resulted in these old countries and are still progressing from the application to practical Agriculture of the sciences with which God and Nature have allied and dignified it, I shall have adduced enough to justify your honorable solicitude for the establishment in our country, of institutions which shall secure for it here the same results.

Were it practicable, as I hope it is, to prevail with the general Press to urge the rights of the landed interest in this respect, it would not be long before its Representatives would be made to recognize its claim to paramount influence in the *legislation of the country*. Compare, for one moment, the agricultural concerns of Virginia with *all other branches of industry combined*:

| | |
|--|--------------|
| Employed in her Agriculture | 318,771 |
| In all other pursuits in the State—commerce, manufactures, mining, navigation,
internal and external, and the learned professions | 74,903 |
| Excess of agriculturists | 243,768 |
| or more than four to one. | |
| Then look at the produce of her agricultural industry, <i>put down at only</i> | \$59,685,821 |
| All other branches of industry united | 17,085,821 |

Since the last war with England there has been paid in like proportions, by the agriculturists of the country, little if anything short of 500,000,000 dollars for military operations, surveys, schools and machinery! But what has been done for instruction in Agriculture? Yet is it not as improvable as the art of war, or any other art or manufacture, if we could have secured to it, too, out of its own contributions to the common treasure, the means of diffusing a better knowledge of the sciences that belong to it, such as the principles of Mechanics, as involved in the structure of agricultural machinery; of Mathematics, as employed in surveying and mapping land; of Civil Engineering, as it teaches the art of road-making and bridge-building and rural architecture; of Geology, to ascertain the nature of soils; of Animal and Vegetable Chemistry, Botany, &c.?

Suppose the other particular classes, (all useful in their way, and to Agriculture itself,) which on all occasions so easily and promptly combine for their own especial welfare, were represented in Congress in the proportion to agriculturists that they are now in proportion to these other classes, as respects both numbers and productiveness; would they yield everything and demand nothing, as farmers do? Why, gentlemen, the very *corn-blades* of Virginia, regarded as the mere offal of her agricultural industry, and not even alluded to in the census of national wealth, allowing 20 pounds to the bushel of corn and 20 cents to the hundred weight, would amount to nearly \$3,000,000, and actually entitle her to more influence, comparatively, in the appropriation of the public funds than she has ever claimed or exercised in the rivalries to which the various classes have given rise in Congress.

What is needed, let me repeat, is to get the *general Press of the country to entertain and evince the sympathy that is justly due to this great, paramount concern of the country*. What lever so powerful as it in controlling the public sentiment and policy of the nation? Yet see in Virginia more than fifty papers devoted to party politics and other objects, and one only appropriated to the cause of Agriculture, and that one left to linger along between life

and death, though conducted with great earnestness and ability. What can be expected by men who are not true to themselves?

I would with great deference suggest, too, that Associations should be formed in every election district in the State, to demand from Congress the patronage that is due to Agriculture in view of the number that pursue it, and the value of its products. Among the first official acts of Presidents Washington and Jefferson were emphatic recommendations to Congress to "encourage Agriculture." Virginia's share of the proceeds of the public lands would in a few years diffuse over the whole State a knowledge of the principles on which the productiveness of Agriculture depends, that would soon result there, as it has done in England and Scotland, according to the most accurate and competent observers, in nearly doubling the amount of her produce.

Should it be in my power to accept your invitation, you shall have timely notice from, gentlemen, your obliged and grateful friend,

J. S. SKINNER.

To Messrs. JOHN BRUCE, W. Y. ROOKER, D. W. BARTON, ROBT. Y. CONRAD, and E. T. SMITH.

GREAT CROPS OF INDIAN CORN FOR THE LAST FORTY YEARS.

WHY OFFER MORE PREMIUMS?

THE interest of Agriculture in no way that it can be viewed any longer requires that premiums should be offered *merely for largest crops of corn!* for, in the results, there is not likely to be anything new or useful. As to mere quantity to the acre, why should Societies throw away their means on an object after the desideratum sought has been obtained? Is there to be no end to the collection of mere facts? Why pile these mountain high? of what use are facts but for the establishment of principles? It was very well, twenty-five years ago, to ascertain, as was done, what *could* be produced by a reasonable and profitable application of labor and manure; but when nothing more that is new or valuable is to be expected, surely reason would suggest the application to something else of the funds applied to this object and all other similar purposes. To show how futile, to say the least, is all farther offer of premiums for particular crops, (since we have long since reached the maximum to be had by all prudent and economical means and processes,) we will give here, once for all, and for the special use of all Premium Committees hereafter, a list of crops of Indian corn that have been made, and that, of course, can be made again; and we would respectfully recommend that no premium be given for a crop less than the largest of these; for let us even suppose that by fifty bushels more of manure and one more genial shower, some lucky fellow should eke out a peck more to the acre, what proof would there be in that of superior skill or merit? What valuable principle would it bring to light whereby the same result might be achieved with more certainty and economy for the future? In reference to this list of crops, which we derive from the *Cultivator*, vol. x., page 123, it is worthy of remark, that while every Agricultural Society in the Union has since been offering premiums for the heaviest crops on patches of corn, the largest here recorded was produced in this State (New-York) as far back as *twenty-three years ago!* and that the first crop recorded was 132 bushels, in 1819, and the last recorded, 1842, was precisely the same; and, farthermore, it is demonstrated that in the interval there has been *no average increase*. Is not this exhibit enough to satisfy all reasonable curiosity as to what can be done, and all hope of farther use-


ful experiments on that everlasting point? If ever we get leisure we will make out a similar list for other stereotype premiums.

| No. of acres. | Product pr acre. | Whole product. | Names and places of cultivators. | Yrs. |
|---------------|-------------------|-------------------|--|------|
| 1 | 136 | 136 | R. H. Rose, Silver Lake, Pa. | 1820 |
| 1 | 118 | 118 | John Stevens, Hoboken, N. J. | 1820 |
| 1 | 172 $\frac{1}{2}$ | 172 $\frac{1}{2}$ | J. & M. Pratt, Madison, N. Y. | 1822 |
| 4 | 170 | 680 | | 1824 |
| 1 | 132 | 132 | Samuel Chidsey, Cayuga, N. Y. | 1819 |
| 8 | 112 | 896 | Earl Stimson, Saratoga, N. Y. | 1823 |
| 5 | 129 | 645 | Wm. McClure, Allegany County, Pa. | 1823 |
| 5 | 136 | 680 | Joseph Evans, Washington County, Pa. | 1823 |
| 1 | 174 | 174 | B. Bartlett, Eaton, Madison County, N. Y. | 1823 |
| 1 | 116 | 116 | T. & H. Little, Newburyport, Mass. | 1822 |
| 1 | 115 | 115 | | 1823 |
| 1 | 142 | 142 | Mr. Wilmarth, Taunton, Mass. | 1825 |
| 5 | 108 | 540 | Charles Bugbee, Palmer, Mass. | 1831 |
| 1 | 140 | 140 | Benj. Butler, Chenango, N. Y. | 1831 |
| 1-136 | | 202 | Henry Sprague, Worcester, Mass. | 1831 |
| 1 | 103 | 103 | "Old Farmer," Rhode Island | 1833 |
| 40 | 140 | 5600 | Asahel Renick, Pickaway County, Ohio | 1835 |
| 1-12 | 100 | 130 | S. Lathrop, W. Springfield, Mass. | 1835 |
| 22 | | 2216 | P. Reybold, Newcastle, Delaware | 1835 |
| 1 | 108 | 108 | R. H. Sheldon, Cayuga County, N. Y. | 1838 |
| 1 | 110 | 110 | E. Humphreys, Caledonia, N. Y. | 1837 |
| 40 | | 3800 | Clark County, Ky. | 1837 |
| 1 | 150 | 150 | Montreal, Canada | 1838 |
| 1 | 131 | 131 | R. Lamprey, Moultonborough, N. H. | 1839 |
| 1 | 116 | 116 | Mr. Brown, Strafford, N. H. | 1839 |
| 1 | 130 | 130 | P. P. Pillsbury, Taftonborough, N. H. | 1839 |
| 1 | 144 | 144 | J. F. Osborn, Cayuga County, N. Y. | 1841 |
| 1 | 121 | 121 | J. Sherman, | 1841 |
| 1 | 112 | 112 | | 1841 |
| 1 | 120 | 120 | Mr. Ellsworth, Conn. | 1840 |
| 1 | 158 | 158 | G. W. Williams, Bourbon County, Ky. | 1840 |
| 1 | 120 | 120 | W. Ingalls, Oswego County, N. Y. | 1839 |
| 7 | | 1352 | J. Myers, Canton, Ohio. | 1840 |
| 1 | 154 | 154 | W. Ingalls, Oswego County, N. Y. | 1840 |
| 2 | 116 | 232 | B. Bradley, Bloomfield, N. Y. | 1841 |
| 1 | 122 | 122 | Samuel Phelps, Cayuga, N. Y. | 1842 |
| 1 | 113 | 113 | Wm. Ingell, Oswego, N. Y. | 1842 |
| 1 | 132 | 132 | W. Wilcox, Saratoga, N. Y. | 1842 |

The number of such crops, where the product exceeded 100 bushels per acre, might be extended to a great length from the list in our possession, but the above is sufficient.

Instead, then, of wasting \$20 of funds not too easily procured, even on him who should happen to make one bushel more by the blessing of Providence and the strength of a long purse, we would give it, and more, for a knowledge of any discoverable but yet unknown facts in reference to the same plant.

SEWAGE COMPOUNDS.—You must not limit your ideas of the compounds which enter into the composition of town sewage to mere excretions, although it is admitted that the feces and urine of the human subject—containing, as they do, the ashes of all the food that has been consumed—form, perhaps, the most fertilizing manure that it is possible to apply to the land. In addition to these excretions, sewer water contains large portions of the alkalis potash and soda, derived from house-drainage, viz., from the pearlash, soap, and common salt, which are so liberally used for domestic purposes. These alkalis form important elements of the food and structure of plants; from the slaughter-houses, markets, and factories, large contributions are also made. There are also the excretions from animals employed in towns, which directly or indirectly find their way into the sewers. Soot, too, which is rich in ammonia and sulphuric acid, is brought down by every shower of rain in large quantities, and poured direct into the sewers. Then there are the debris of the roads, pulverized by constant traffic, and which furnish an abundant supply of alumina, silica, and iron, (necessary ingredients in the food for plants,) which, along with the soot, is washed direct into the sewers. The sewage compounds are abundantly supplied with the elements of the food for plants.

 The keeper of the serpents and other reptiles at the Garden of Plants, Paris, has just brought to perfection an apparatus of great simplicity, for the artificial hatching of eggs. All that is required for the purpose is to keep a lamp constantly lighted.

VALUE OF LAND IN LA PLATA.

INSTINCT OF CATTLE.—Mr. Darwin, who accompanied the *Beagle* as Naturalist in her voyage round the world, speaking of a property to the north of Montevideo, says: "In the evening we took a ride round the estate; it contained $2\frac{1}{2}$ square leagues; one side was fronted by the river Plata, and the two others guarded by impassable brooks. There was an excellent port for little vessels, and abundance of small wood, which is valuable as supplying fuel to Buenos Ayres. I was curious to know the value of so complete an *estancia*. Of cattle there were 3,000, and it would well support three or four times that number; of mares, 300; together with 150 broken-in horses, and 600 sheep. There was plenty of water and limestone, a rough house, excellent corrals (inclosures for cattle), and a peach orchard. For all this he had been offered £2,000, and he only wanted £500 additional, and probably would sell it for less. The chief trouble with an *estancia* is driving the cattle twice a week to a central spot, in order to make them tame and to count them. This latter operation would be thought difficult where there are 10,000 or 15,000 head together. It is managed on the principle that the cattle invariably divide themselves into little troops of from 40 to 100. Each troop is recognized by a few peculiarly marked animals, and its number is known; so that one being lost out of 10,000, it is perceived by its absence from one of the tropillas. During a stormy night the cattle all mingle together; but the next morning the tropillas separate as before, so that each animal must know its fellow out of 10,000 others.

[Darwin's Journal.]

We have ourselves observed this remarkable propensity in cattle. There are probably more cows in Washington, D. C., than in any town in the Union in proportion to population. In summer season, we have had the curiosity to count the different herds feeding on the commons, and have uniformly found them to consist of about from forty to seventy-five, browsing together; and what is farther remarkable, the same cows always rise together, as they call it in the country, and lead, each herd, on its own range through the season.

ECONOMY IN HEATING ROOMS.

My hall is sufficiently heated by the dining-room fire, which fire-place, at the sides and back, consists of fire-bricks or slabs 3 inches thick, which, when red-hot, contain a great heat, and at the back of which, in the wall (next the hall), is a kind of hot-air closet about a yard square, and 5 or 6 inches deep, as the wall will admit; at the bottom of this closet is an air-brick to let in the cold air, and at the top is another, to allow the hot air to escape into the hall. My library is also similarly heated by the kitchen fire; and I am satisfied this plan would admirably suit a green house, where it could be applied. I had mine so constructed when I built my house. J. H.

How easy would it be to have a *poultry-house* thus heated, if built at the end of the kitchen, in which a fire is constantly maintained, in the country? With the warmth produced by hot air, generated under the hearth, and at the back of the kitchen fire-place, and with a constant supply of food and lime, together with animal food of some sort occasionally, it would be an easy matter to have a *constant supply of eggs*, at least for family use; and yet, to the scandal, we were going to say, of all good *husbandry*, it is not uncommon for a family on a farm of one hundred or five hundred acres of land, to go for weeks in winter time without an egg for the good housewife to clear her husband's coffee, much more to treat him, as she would like to do, now and again, to a nice custard or pan-cake or omelette. But if the "lord and master" won't provide the indispensable pre-requisites, let him at least have the good sense not to grumble or look sour when he takes his seat at the table, where so much depends on him to have all smiles and cheerfulness. If, in fact, there be in this life any scene of true rational happiness and enjoyment, where are we to look for it if not at the board of an *industrious, intelligent farmer*, where all are gathered around from their various occupations—*provided* the head of the family feels a consciousness that by his works and his example he is doing all in his power for the comfort, happiness, and the moral and intellectual improvement of all who look up to and depend upon him?

It is the intention of the Directors of the Great Western Railway to set apart one division of a first class carriage in every train for the exclusive accommodation of ladies who travel without a male companion.

LETTER VII.

PROFITS OF SHEEP HUSBANDRY IN THE SOUTHERN STATES.—3. BY GIVING TO SOUTHERN AGRICULTURE A MIXED AND CONVERTIBLE CHARACTER.—4. BY FURNISHING THE RAW MATERIAL FOR THE MANUFACTURE OF DOMESTIC WOOLENS.

Expediency of Rotation in Crops...Consequences of omitting it on Wheat Lands of New-York...Mr. Gaylord's views...Consequences in the Southern States...Mr. Roper's Report in the Legislature of South Carolina—[Cotton Statistics of that State—Comparison with other States—General Agricultural Resources—necessity of new staples]...Judge Seabrook's Report to the State Agricultural Society of South Carolina—[Agricultural Statistics—Remedies proposed for present "distress"]...Singular omission of Wool as one of the proposed new Staples...Southern prejudice on this subject—Causes...Impropriety of the one-crop system—Diminishes crops—Deteriorates land—Multiplies insects...Fertility sustained by Rotation—Causes... "Resting"—its inexpediency...Some of the Crops of every Rotation must be converted mainly into Manure—Superior economy of converting them into Animal Manure—Sheep the most profitable animals for this purpose...Leading principles of a profitable Southern Rotation—Six-shift Course proposed—Five-shift Course—Six-shift Course for poor soils...Col. Taylor's Four-shift Course—Objections...Comparative profit of growing Wool, Cotton and Rice, incidentally alluded to...Economy of producing the raw material for the Manufacture of Domestic Woollens...Cost of Slave Cloths per head per year...Prices now paid for these Cloths—Cost of manufacturing them—Data for estimating such cost...Great profits of Manufacturers in the Northern States—Their Dividends—Their method of exchanging Cloth for Wool—Working Wool at the halves...Cost of Cloths obtained by these methods...The South may obtain the same advantages—Natural Facilities—Cost of Machinery—On what terms worked—Operations...Cloths spun and wove by hand cheaper than the imported ones—Cost of the several processes of manufacturing them—Estimate of Cost per yard at the North...Cost of establishing Carding and Cloth-Dressing Machinery...Home-made Fabrics diminishing at the North—Causes...Same Causes will not operate to so great an extent at the South—Reasons...Probable Cost of Home-made Cloths, South.

Dear Sir : The third great benefit claimed by me among the profits of sheep husbandry in the Southern States was, "its comparative efficacy in giving to Southern Agriculture a mixed and convertible character, and thereby sustaining (or improving) all the present good tillage lands, in the place of continuing the "new and old field" system (tilling land until it is worn out, then abandoning it and opening new lands), once so general, and even now by far too prevalent."

The first object of mixed husbandry has been already stated—the home supply of the various necessities of life. Its second, and still more important one, is the preservation of existing fertility in all soils fit for tillage.—It certainly requires no proof or argument to demonstrate the superior expediency of maintaining the fertility of soils, if it can be done, by a rotation of crops, even though each of these crops is not, separately considered, the one which would yield the greatest immediate profit. In the language of the hackneyed aphorism, it is never expedient to "kill the goose which lays golden eggs."

This constant cropping with one plant was once extensively practiced on the wheat lands of New-York, as many of their present owners can bitterly attest. Even now there can be no doubt that, on nearly all of them, wheat returns too often in the rotation. These lands were once rapidly, and are still, I fear, slowly declining in value; while the grazing lands of Southern New-York, where men have been *compelled* to be more discreet, have been constantly improving and approximating to the former in market value.*

* This calls to mind a letter which I received from an old and valued correspondent, the late Willis Gaylord, but a short time prior to his death. I had spoken of the advantages of his own, the wheat region, over the grazing region in which I reside. Mr. G. combated this idea. He thought capital invested here
(1132)

The same system has prevailed on the rice, tobacco, and cotton lands of the South, and has, for a variety of reasons not necessary here to be discussed, been, in the case of the two latter at least, more fatally persisted in. I have already alluded to the exhaustion of your soils consequent on this course of culture, but to show the wide extent of the evil—its pecuniary consequences individually, and on whole States—the now admitted necessity of a rotation of crops—the equally conceded necessity of introducing some *new staple*, or staples, to render the other crops in the rotation, besides cotton, rice, and tobacco, *remunerative*—and various other considerations having a strong bearing on this whole question—I quote the following statements from *Southern*, as well as highly authoritative sources.

The Committee on Agriculture of the House of Representatives of South Carolina, through their Chairman, Hon. R. W. Roper, made a Report to that body, Dec. 14, 1842, from which the following are extracts :

"Let us now turn our consideration to one other great staple, cotton, of which the statistics are so exact that we can ascertain by calculation what our prospects are as regards competition in that article. The United States produce at present 573,012,473 lbs.—more than one-half the crop of the whole world. South Carolina grows of this 43,927,171 lbs., or 1-13 part of the quantity; but from this source of profit her palmy days are past. Every year opens new lands in the West, where congeniality of soil and climate to this commodity increases the product per acre far beyond what can be reared at home, and consequently reduces the value infinitely below the costly prices which formerly enriched Carolina. These new lands produce, on an average, 2,500 lbs. of cotton per hand, while the lands in Carolina yield but 1,200 lbs., and the expenses of a laborer being about equal in either place, reduces the Carolina cotton to half its intrinsic value. We have also the declaration of Mr. Dixon H. Lewis, in a recent speech in Congress, that cotton, divested of Government embarrassments, might be grown in Alabama for three cents a pound.

"Your Committee will avail itself of the lucid calculations of a distinguished and talented individual,* to present another view of the subject, startling in its details, and bearing strongly on the propriety of summing up all our resources. The crop of the world amounts to 1,000,000,000 lbs., which would require, at the rate of 250 lbs. per acre, 4,000,000 of acres to grow this quantity. Now, the four States bordering on the coast of the Gulf of Mexico—viz., Louisiana, Mississippi, Alabama and Florida—contain 130,000,000 of acres; proving that, if only one acre in 32 were found capable of producing 250 lbs. to the acre, these four States could, alone, supply the demand of all the markets in the world. In this calculation, the produce of Georgia, South Carolina, North Carolina and Virginia, with portions of other States, besides 150,000,000 acres in Texas, are entirely excluded. The lands of the Gulf States, therefore, and Texas, are sufficient to supply the demands of the world in all time to come. Where, then, is the hope or prospect of South Carolina in the competition? . . .

"South Carolina comprises within her borders 16,000,000 acres of land, of which only 1,300,000 are cultivated. Of this, cotton occupies 175,700 acres; rice, 30,000; Indian corn, 500,000; potatoes, 22,612; wheat, 24,079—making an aggregate of about 300,000 acres; the balance of 500,000 are taken up in oats, rye, barley, hay, tobacco, and a limited portion of other articles necessary to the supplies of life. To what use, then, is the balance of our ter-

returned quite as good or better profits, than on the wheat lands. He thought, taken as a whole, the grazing farmers were doing better than the wheat farmers. The latter, though ostensibly making an equal and frequently better per centage, were *wasting their capital*. The grazing lands and the wheat lands were rapidly approaching each other in market value, by the rise of the former and the deterioration of the latter. May this not afford a parallel to what will one day be witnessed in the Southern States?

It is difficult for me to pass by the name of this accomplished writer—this pure, upright and philanthropic man—without throwing one stone on the cairn of his well-merited fame. He felt himself, from his infancy, cut off from the companionship of his kind, by disease and deformity; but, notwithstanding the body was "ugly," he "carried a precious jewel in his head." Triumphant over constant physical sufferings which would have prostrated most men, he made attainments in general knowledge possessed by few of his contemporaries. His range of reading and study was remarkable. In his beautiful and sparkling letters to me, every subject and almost every science is touched upon by him in a manner that shows that he at least had mastered their general principles; and, in the *abandon* of private intercourse, they seem to have been to him as the flowerets of a garden, among which his spirit could roam with that playful and joyous activity which was denied to his poor, frail body, among the objects of the outer and physical world.

Freely, unassumingly, and without an aspiration but for the good of his fellow men, his mind poured out its stores on a variety of topics in the publications of the day. Fortunately, he gave his principal attention to the subject of Agriculture, and, if not a *discoverer* (which he never claimed to be), he investigated and collated with an industriousness of research, discrimination and perspicacity, which brought the truth from all the different sources where discovery or experience had left its *disjecta membra*, into essays, so well compacted, so clearly arranged, that men of the most ordinary parts could not only understand its separate sentences and positions, but their connection and aggregate bearing, and thus master the whole subject. Peace to his ashes!

* Gov. Hammond.

ritory, of 14,000,000 of acres, to be appropriated? Are we forever to be supplied with stock from the West, bread-stuffs from the Middle States, and manufactures from the North? Is all that we can realize from our labor to be expended abroad? Nothing to be left for our own improvements or our luxury? As one means of correcting this evil, your Committee propose an Agricultural Survey of the State, to determine our natural advantages, develop our facilities of improvement, exhibit our profits and expenditures, and awaken our citizens to the importance of *rying with the rest of the human family in all the improvements of which our location is susceptible*

"The exposition which your Committee has given, showing the great competition of foreign rice with our own, and that South Carolina cannot compete with the West in the cheap production of cotton, and that she must, ere long, be driven from the market, demonstrates the necessity of looking abroad and around us *for other sources of advancement and profits than those we possess.*"

"We cannot expect that *accident* is continually to supply new staples suited to our soil and climate, and place us beyond the reach of contingent circumstances. We must resort to science to improve our Agriculture, and to machinery to enlarge and prepare present articles of culture, *or transplant and acclimate new products*, which will again, like those we have lost and will lose, lead off for a period in the employment of capital, amassing of wealth and diffusion of human happiness."

The House and Senate agreed with the Report, the same day, and its principal recommendation, an Agricultural Survey of the State, was adopted.

The Committee appointed by the South Carolina State Agricultural Society to consider the scheme of Col. Davie to reduce the quantity of cotton grown, made a Report, through their Chairman, Judge Seabrook, at the winter meeting of the Society, 1845-6, from which the following are extracts :*

"Another cause of our distress is that, in a large portion of the southern country, cotton is cultivated, when its production does not now, and never can, at all compensate the planter for the labor bestowed. *There it is desirable for every one that other branches of industry should be pursued.* . . . We do not intend to encourage the cultivation of cotton to the neglect of the other products necessary to support or comfort. Every planter *should promptly render himself independent in reference to those articles which could be produced on his plantation.* In this way he would profitably curtail the quantity of land devoted to the cotton crop. An abandonment of the present extremely defective mode of culture, and the substitution of a better, would insure a larger quantity of cotton than would be lost *by diversifying the products of industry.* In other words, his cotton crop would be larger; his corn, wheat, rice, oats, barley, horses, mules, hogs, cattle, sheep, butter and vegetables, would be the produce of his farm.

"If, however, the cotton crop is to be given up one-half, after all the reductions of it which we have sanctioned, to what else can the planter of the South so profitably turn his attention? To grain? He already, in ordinary years, produces twice as much as the Middle States, and about one-eighth more than the West. In Indian corn alone, the produce of the South, by her last census, was 300 million bushels. If the planter of cotton is engaged in an unprofitable business, much more is the grain raised. . . . *Millions of acres in South Carolina, including the lower country, are admirably adapted to the raising of rich grasses.* This might be added as another branch of industry, from which reasonable profits might be realized, and might very well be added to the cotton planter's income. The business of tanning and the manufactures of leather might be and ought to be enlarged. In this State, all the means of a successful pursuit of this branch of industry are at hand and within the reach of every one. Hides, lime, bark and mechanics (slaves) are abundant."

The remarks in both of the above extracts, though made exclusively in reference to South Carolina, will apply equally well, in many obvious particulars, to all the old cotton and tobacco growing States.

To a Northern man, accustomed from his childhood to see sheep husbandry blended, to a greater or less extent, in the operations of nearly *every farm*, and to live among farmers who regard it just as indispensable, and as much a matter of course, as the production of bread-stuffs, it seems singular enough that neither of the above able Committees, in looking for

* As has been before stated, the other members of the Committee were Judge O'Neill and W. J. Allston, Esq. Mr. A. did not concur with his colleagues in the proposition that there was not already an absolute over production of cotton. He believed there was. In all other particulars, and consequently in all embraced in the extracts given, he concurred in the Report.

"other sources of advancement"—"new products"—"other branches of industry"—both to bring into use millions of acres of unproductive territory "admirably adapted to the raising of rich grasses," and to render profitable and preserve the fertility of the tillage lands of the State, should not have thought of wool growing—or only thought of it, as it were, incidentally—at the very heel of a catalogue of farm products, and in reference solely to supplying the home want!

Indeed, the estimate which has been set upon sheep husbandry generally, and by all classes of agriculturists, South, is a source of unmixed surprise to one acquainted with this pursuit, and with the resources of that region for sustaining it. There appears among many, if I may credit your own writers,* to be even a *prejudice* against *sheep* and *sheep husbandry, per se!* Is this because these animals bear a staple, and give employment to manufactories, which have claimed the "protection" of Government, to the prejudice, in the opinion of Southern politicians, of Southern interests? Is any portion of it due to the scornful denunciations of the brilliant, but eccentric and cynical, statesman of Roanoke, who "would at any time go out of his way to kick a sheep"? Or is it owing to the, in most respects, justly popular writings of Col. Taylor, of Virginia? Hon. Andrew Stevenson, of the same State, in a letter to John S. Skinner, Esq., says:†

"The prejudice which the late Col. John Taylor, of Caroline (who, by-the-by, did more for Agriculture than any man in America), had against sheep, has been the means of rendering this description of stock unpopular in many parts of the southern country. . . . If this distinguished patriot and statesman had lived at this day, he would have changed his opinion."

The impropriety and inexpediency of giving all the labor and prime land of the country to the exclusive cultivation of one or two crops, even leaving the deterioration of the lands, consequent on such a course, out of the question, is forcibly set forth in the Reports above quoted from. But that deterioration is an infinitely more fatal evil, both to individuals and States. An injudicious course of cropping can be easily changed; but, if the land is entirely impoverished, the change comes too late, until labor and capital have been employed on its restoration. The tendency, nay, the absolute connection as *cause* and *effect*, between the one-crop system and such deterioration, has been proved by too sad an experience at the South—is too universally recognized and conceded—to find a single questioner who possesses ordinary intelligence. Whether the consequent phenomena are solved by the excretionary theory of De Candolle, or the more ordinary one of the exhaustion of some of those substances which constitute the necessary food of plants, the facts presented are the same.‡ The soil yields constantly diminishing crops, until it becomes incapable of producing more than scattering and feeble plants; and the insect enemies of the latter, which would perish if deprived of their aliment by the substitution of some other plants, multiply in a constantly ascending ratio.§

* Hon. Andrew Stevenson, John S. Skinner, *et al.* in *Monthly Journal of Agriculture, &c.*

† If such protection has prejudiced the South, what stronger reason why she should remunerate herself by appropriating a share of it!

‡ *Monthly Journal of Agriculture*, July, 1845.

§ The theory of M. De Candolle, apparently so strongly supported by the experiments of M. Macaire, has found many believers. But the statements of the latter have been contradicted by M. Braconnet, M. Mirbel, and finally are totally overthrown, in my judgment, by the experiments and investigations of Mr. Alfred Gyde, of Scotland. Mr. Gyde shows that the minute excretions of plants have the same composition with their *sap*; and he also watered plants with a solution of their excretions, not only without injury, but to their manifest benefit! For Mr. Gyde's able Prize Essay on this subject, see the *Transactions of the Highland and Agricultural Society of Scotland* (March, 1846). I am not aware that this essay has been republished in our country. It certainly should be.

§ Of the latter evil, the past year furnished a pregnant example. I saw it stated last winter, in the *South Carolinian* (published at Columbia, S. C.), on the authority of an United States Senator, that the falling off in the cotton crop would be enormous, by reason of the depredation of *worms*. This evil is constantly increasing, and must continue to, while the planter continues to provide aliment for each succeeding horde of destroyers, by continuing on the soil the plants on which they prey.

Experience has shown that if vegetables of different classes are made to follow each other, the soil will much longer retain its productiveness.— Even when “exhausted” of some one or more of those ingredients necessary for the healthy production of a particular plant, it is found to produce others luxuriantly which do not require the lacking ingredients, or but very minute portions of them. And, by a most beautiful arrangement of physical causes and effects, when a plant is removed from the soil, and notwithstanding its place is occupied by others, a process of restoration at once commences to replace all that the absent plant has appropriated, and to prepare the kindly bosom of the earth again for its reception. Nature herself, in ministering to this beneficent end, becomes a great laboratory; and in her most ordinary, as well as her most unusual operations, she is constantly producing those chemical changes, and furnishing those chemical ingredients, which restore what has been abstracted by man’s cupidity, or lost by his improvidence. The gentle rain brings down ammonia and carbon to plants. The frost rives the solid rocks, to disengage their fertilizing constituents. The sun, in his flaming path, looks down not only to warm and give us light, but to perform functions in the vegetable economy without which all herbage, except a few miserable fungi, would perish; and to all he imparts their varied and beautiful coloring. The thunder which shakes the walls of cities, and strikes man with awe, brings to our aid one of the most efficient promoters of vegetation. Even the bursting volcano converts its fiery crater into a crucible and retort, and gives off that gas which forms so large a portion of all the vegetable and animal productions of the globe: and the wild winds, which strand navies in their course, equally diffuse it over the earth.

It follows from the above positions that naturally good lands* which are more or less exhausted, will be gradually resuscitated by “rest,” or an entire exemption from tillage; and hence the absurd idea that lands require physical “rest,” in the same sense in which the tired animal muscle requires it, after continuous exertion. But, apart from the theory, the practice of “resting” lands is inexpedient, for the following reasons: If a plant is not continued on a soil until it *consumes* any of those inorganic constituents necessary to its production—if, on the other hand, it is succeeded by a plant which makes its heaviest drafts on those inorganic substances which its predecessor required the least of, and *vice versa*—the natural recuperative process above adverted to, *aided by means which lose to us none of the value of the crops*, will repair the waste made by each plant, before it again occupies the soil, in a judicious rotation. Hence, by a rotation of crops, fertility can be indefinitely sustained, and the earth each year return its increase. Thus the ends of “rest” are attained, without its great and unprofitable sacrifices.

To sustain the fertility of the soil, some portion of the crops of every rotation must be converted into manure. These are the “aiding means” above alluded to. They may be converted into green or animal manure. If the former, the whole crop is plowed under. If the latter, the crop is first partly converted into animal manure, by animals depastured on it, and then this animal manure, with the remaining vegetation, is plowed under. The last is always the most economical method, on good lands,† because the crop is worth almost as much for manure, *after passing through the*

* I say “naturally good lands,” for those entirely deficient in several of the necessary constituents of a fertile soil might require ages of rest to obtain these constituents—if, indeed, they ever would, by merely natural causes.

† I have limited the assertion to “good lands,” because a crop of green manure, turned under at the proper stage of its growth, will undoubtedly make rather more manure than in any other way; and it may be expended many times to give poor lands *all*. This is especially true in the reclamation of barren lands.

bodies of animals, as it would be turned under green; and then we have all the profit made on or by the animals—meat, wool, &c.—without any additional cost. Sheep, being the best manurers, and otherwise the most profitable animals, will (with enough other animals to supply all the home demand for the necessities furnished by them) best sustain a profitable rotation.

Here, perhaps, the discussion of this topic in connection with the subject matter of these letters should terminate; but I am unwilling to abandon it, without making a few practical suggestions as to the rotation which would be found most profitable at the South—more particularly on the valuable cotton lands, which are suffering most for the want of it. It is manifestly impossible to lay down any rule or rules on this subject, which can or should be rigidly acted upon, in all instances. Leading principles can only be declared, and, if correct, the intelligent man can always vary their application so as to meet the exigencies of his particular case.

First, I should consider it indispensable on all cotton (or tobacco) lands,* under all circumstances, to keep at least one-third of them in pasturage, to insure the proper amount of manure, over and above cotton seed, and such occasional supplies of swamp mud and marl as might be obtained at spare intervals—and all other incidental manures. Another third, I believe, should be generally devoted to grain for bread stuffs, for fattening the necessary amount of bacon, and for the winter forage of horses, mules, swine, &c. Unless the horses and mules, and, perhaps I should add, the cows, were wintered entirely, or in great part, on grain and the offal of the grain crops, one-third of the *cultivated land* in grass, would not support animals enough to produce the manure requisite for two-thirds in cotton and grain. But in making the above division, I spoke only of the arable lands fit for the growth of cotton. Most plantations have poor, or swampy, or rough lands, which would most profitably be kept permanently in grass, and these would supply the deficit. The remaining third of the arable lands might be devoted to cotton, or, in the tobacco region, to tobacco.

By the course above proposed, the cotton (or tobacco) and wool would be made the salable products. The grain, grass, dairy products, bacon, &c., would be consumed on the plantation. This is as it should be. European famine has given a stir to the latter products this year, (and it may for a year more,) in the Southern markets; but with the ordinary European demand, the old Southern Atlantic States cannot, as we have seen, compete at a profit with these commodities, which debouch through the Mississippi, the St. Lawrence, and the northern canals. With the *two wools*, as they are sometimes called, the “vegetable and animal,” these States can undoubtedly sustain themselves against the pressure of any outward competition.

Such a division of crops as the one above proposed, could be effected by a six-course system of rotation. Let us suppose the land of the plantation fit to grow corn and cotton, divided into six equal fields. I then propose the following rotation:

| | | |
|--------------------------------------|--------------------------------------|--------------------------------------|
| 1st year, Grass depastured. | 1st year, Grass depastured. | 1st year, Cotton. |
| 2d .. do. do. | 2d .. Cotton. | 2d .. Cotton with yard manure, &c. |
| 3d .. Cotton. | 3d .. Cotton with yard manure, &c. | 3d .. Corn with peas. |
| 4th .. Cotton with yard manure, &c. | 4th .. Corn with peas. | 4th .. Small grains with grass seed. |
| 5th .. Corn with peas. | 5th .. Small grains with grass seed. | 5th .. Grass depastured. |
| 6th .. Small grains with grass seed. | 6th .. Grass depastured. | 6th .. do. do. |

* I have not included the rice lands, because being deep beds of alluvial deposits, composed in a great measure of organic matter, and being susceptible of irrigation, they will not wear out like ordinary soils, and stand less in need of rotation in their crops.

| | | |
|--|-------------------------------------|---|
| 1st year, Cotton with yard manure, &c. | 2d .. Corn with peas. | 1st year, Small grains with grass seed. |
| 2d .. Corn with peas. | 3d .. Grass depastured. | 2d .. Grass depastured. |
| 3d .. Small grains with grass seed | 4th .. do. do. | 3d .. do. do. |
| 4th .. Grass depastured. | 5th .. Cotton. | 4th .. Cotton. |
| 5th .. do. do. | 6th .. Cotton with yard manure, &c. | 5th .. Cotton with yard manure, &c. |
| 6th .. Cotton. | | 6th .. Corn with peas. |

Supposing each of these fields to contain 50 acres, this would give 100 acres of grass, 100 of cotton, and 100 of grain (50 of corn and 50 of small grains) annually.

By this course all the hauled* manure, each year, would be given to one-sixth of the land, and consequently the same field would not receive it but once in six years—yet *every crop* would be *adequately manured*. The first cotton crop would receive an ample amount from the grass roots and the droppings of animals for two years; the second, from the hauled manure; the corn, from the manure left by the previous crop, and, if needed, by a small amount of cotton seed, ashes, (or some other mineral fertilizer,) in the hill; the small grain crop would be amply manured by the peas sown with the preceding corn; and the land would go back into grass in excellent “heart,” and, if the previous tillage was what it should be, entirely free from weeds. The corn might intervene between the two cotton crops, and thus remove the objection which exists against taking two crops of the same kind in succession. But I placed cotton 4th, because there should come a manured crop at this period of the rotation, and I thought it better to give the manure to the more valuable crop, and because cotton, as the 5th crop, would not admit of the cultivation of the pea, to provide manure for the small grain succeeding. The rotation might be thus varied, however, if circumstances should seem to render it desirable.

I have put down no meadow in the rotation on the *arable* lands. But I believe the growth of hay to a certain extent, not only to supply any ordinary deficiency in winter feed beyond the quantity furnished by the usual sources—but to guard against contingencies, would be good economy in all cases. All farm animals must be well wintered, to give a profitable return in summer; and those occasional scarcities of fodder always liable to overtake the farmer, should be providently guarded against. It is never considered poor economy, in the North, to have a few tons of hay even to summer over. The necessary meadows for the plantation might be made on some of the less arable lands before referred to—and, when the tillage lands are in an uncommonly fertile state and pasturage plenty, it *would do* to mow one of the grass crops (the second one) of the above rotation, though, if avoidable, I should think the other course entirely preferable.

On poorer lands—the poorest class which can be profitably devoted to cotton growing—I would propose a five-shift course, as follows:

| | |
|-----------------------------|---|
| 1st year, Grass depastured. | 3d year, Cotton. |
| 2d .. do. do. | 4th .. Corn with peas. |
| | 5th year, Small grains with grass seed. |

The manure to be given to the third or fourth crop, according to circumstances, or divided between them.

On lands of a still inferior grade, but which it may be expedient to plow at intervals, I would propose the following:

| | |
|-----------------------------|---------------------------------------|
| 1st year, Grass depastured. | 4th year. Grass depastured (or mown.) |
| 2d .. do. do. | 5th .. Corn with peas. |
| 3d .. do. do. | 6th .. Small grains with grass seed. |

* I mean by this, the manure from *every* source which is *carted* upon the land in quantity, as contradistinguished from that which is dropped there by animals, made by plowing under vegetables, or carried on in small quantities to drop in the hill, &c.

The number of years depastured to depend upon fertility—the poorer the land, the longer it should be kept in pasture.

The following is the rotation which was introduced by Col. Taylor, north of the cotton-growing region:

| | |
|--|--|
| 1st year, Corn. | 3d year, Clover (and weeds) not mown nor |
| 2d .. Wheat and clover sown—if too | grazed. |
| poor for wheat, left at rest and not grazed. | 4th .. Clover not mown nor grazed. |

Of this, Mr. John J. Thomas, one of the Editors of the Albany Cultivator, very justly remarks:

“It was materially opposed to the principles of good husbandry in several respects. It furnished vegetable manure only to the land. A large portion of the value of this vegetable growth was lost, by dissipation into the air, during its decay. The returns from the land were necessarily small, as only two years out of four produced crops for harvesting. And it greatly increased the labors of tillage, by the increase of noxious weeds.”

Had this clover been fed off by sheep, a portion of the above objections would be inapplicable, and there would be no danger of the corn leaving the soil too impoverished for wheat, particularly if peas were sown with the former, to be plowed under. A crop of *weeds* is, of all others, the most to be avoided, as the seeds deposited by it will continue to sprout for years with the subsequent tillage crops, rendering them foul and difficult of cultivation.

I may be in a profound error, but I cannot but believe, after carefully studying Southern Agriculture, and the circumstances which invest it, that by adopting the six-shift system of rotation above recommended, or something analogous to it, on the cotton lands, the desideratum expressed in Judge Sealbrook's Report will be attained. More cotton will ultimately, if not even now, be produced from less land: the other necessities of life will become mainly the product of the plantation; a new staple will be introduced to employ the surplus capital, as profitable at least in its acreable products as cotton, and tending to the constant reparation, as cotton tends to the constant waste of the fertility of the land.

I will not tire you, Sir, with a comparison between the relative profits of wool and cotton growing. On looking over the answers of Southern gentlemen to Mr. Walker's Treasury Circular, (1845,) I find that the stated profits on cotton in the Atlantic and Gulf States, west of Louisiana, range from 1 to 8 per cent. on capital invested—the average of all the statements being about $4\frac{1}{2}$ per cent.!

I may remark incidentally that in your own able replies to that Circular, you set down the profits of rice growing between 1842 and 1845, at $7\frac{1}{3}$ per cent.; for the ten preceding years, at “about 8 per cent.”

A reference to Letter V. will show you how these profits compare with those of wool-growing. Admitting the accuracy of the data therein given, there is no *very great* difference in the cost of growing a pound of wool and a pound of cotton!

We come now to the *fourth* point of view in which we are to regard the profits of sheep husbandry in the Southern States—“whether independent of preceding considerations, and even if the staples furnished by sheep husbandry proved no more profitable, in direct returns on capital invested, than some of the present staples, it would not be better economy, on the whole, for the South to produce the raw material and manufacture domestic woollens, particularly for the apparel and bedding of slaves, than to be dependent for them on England and Massachusetts!”

The woollen apparel and bedding of slaves, when no part of it is manufactured on the plantation, costs about \$6 per head per annum. The blankets imported from England weigh about $4\frac{1}{2}$ lbs. and cost a little over

\$3. The Welsh plains, imported from England, weigh usually not far from 13 ounces per yard, and cost from 65 to 70 cents; and the Chelmsfords, a heavy, coarse article, from Massachusetts, from 50 to 58 cents.

Now what is the cost of manufacturing (including wool and every other expense,) cloth of the same amount of stock, and better quality, than Welsh plains? To the present weight of the cloth per yard add one-third, and you have the weight of the wool in the fleece—as bought of the farmer.* If, then, the Welsh plains weigh 13 ounces per yard, they required $17\frac{1}{3}$ ounces of fleece-wool as stock. Wool of the quality worked into “plain cloth” or “sheep’s gray,” in this State, (New-York,) many shades better in quality than the stock of Welsh plains, has averaged from June to December, 1846, from, say, 20 to 22 cents a pound†—or, if pulled from the pelts of slaughtered sheep, as is the case with large quantities of it worked into these cloths, it did not, during the same period, stand the purchaser-in to exceed 18 cents per pound. Assume the average to be 21 cents per pound, and the stock of a yard of these cloths ($17\frac{1}{3}$ ounces) would cost $22\frac{3}{4}$ cents.

You are familiar with the character of the “sheep’s grays” of New-York. They are worn almost universally by our farmers. Of the twenty-five thousand men you saw at the State Fair at Rochester, at least three-fourths of them ordinarily wear this quality of cloth for pantaloons, and say one-half of them for coats. Its ordinary weight is from that of the Welsh plain to 16 ounces per yard, and its style and expense of manufacture are superior to those of the former. It can be manufactured, including use of machinery, &c., and every process after the wool is received in the fleece, to fitting it for market, for *eleven cents per yard*! A merchant of this State owns a manufactory, employing say \$25,000 or \$30,000 of capital, which turns off from 500 to 600 yards of cloth per diem—the fleece-wool being converted into finished cloth in eight days. His whole expenses, including use of manufactory, averages, *according to his own statements*, not to exceed the above named price per yard. Add this sum to the cost of wool, and cloths containing an equal quantity and quality of stock with Welsh plains would cost $33\frac{3}{4}$ cents per yard; and you therefore pay for this class of cloths about *one hundred per cent.* beyond the first cost, for transportation, duties, and manufacturer’s profits. The latter, of course, absorbs most of the immense sum thus paid, or rather *thrown away*, annually by the Southern States. The Chelmsfords, and various other woolen goods imported by you, are probably manufactured at nearly equal profits.

Is it singular, then, that “*acres* of woolen manufactories” are now in the process of erection in the North? or that existing establishments are *declaring* dividends of from ten to fifteen per cent.?[‡]

But I have not done with the data of manufacturing. The manufacturer above alluded to has, to my certain knowledge, exchanged “sheep’s grays” requiring a pound of stock per yard, for wool of the same quality as the stock, giving a yard of cloth for $1\frac{1}{4}$ lbs. of wool. Calling this wool

* After being washed in the ordinary manner on the back of the sheep.

† Wool has risen since December.

‡ I did contemplate an enumeration of the new woolen manufactories now building, or in contemplation, within my knowledge, in this State and New-England; but will mention but a few of the most important ones. The Bay State Mills, now in process of erection in the new city of Lawrence, Mass., will work up 2,000,000 lbs. of wool per annum. One of the mills, 200 feet long and six stories high, will go into operation this summer. The machine-shop, wool-house, &c., (the mere offices,) will be, including wings, *thirteen hundred feet* in length, and three stories high. Their very *sawer* will cost \$25,000! A splendid steam mill has just gone into operation in Utica, in this State, which will work up 1,000,000 lbs. of wool per annum. Another of the same size is in contemplation, in Utica; another in Syracuse; another in Auburn, &c. There never was a time when American manufactures stood on a firmer basis, or were making better profits *with a prospect of having them continuous*. This is *conceded* by the *ablest of the manufacturers themselves*, as I shall, in the proper place, show.

21 cents per pound, the cloth would thus cost the purchaser 36 $\frac{3}{4}$ cents per yard.

Any of the manufactories doing custom-work will manufacture these goods "at the halves," so that a yard requiring a pound of stock would cost two pounds of wool, or 42 cents. That as heavy as Welsh plains would thus cost 45 $\frac{1}{2}$ cents, it being from 19 $\frac{1}{2}$ to 21 $\frac{1}{2}$ cents per yard *less than you now pay*. Yet here the manufacturer of *custom-work* admits the sufficiency of the profit, by asking no more.

Blankets are of still coarser wool, having the appearance of Smyrna, or inferior South American. They are not "sheared,"* which diminishes the waste. Neither do they need dyeing matter. But independent of these considerations, calling cost of stock per pound, and the waste from all causes the same, 6 lbs. of fleece-wool would make a blanket. To the wool costing 21 cents a pound add 11 cents per pound (of the stock) for manufacturing, and the actual cost of the blanket is \$1 92. Have them manufactured by the halves, and they would cost you 12 lbs. of wool each, or \$2 52.

I have in the previous estimates, based my calculations on the *market price* of the lower quality of medium wools.† But there is another and a most important view of the subject. It has already been shown that the South can produce wool, to any desirable extent, at a sum not exceeding 8 cents per pound—and, in favored localities, at a much lower rate. By the exchanging system (wool for cloth) you would get a yard of cloth equaling the Welsh plain in stock, and superior in quality, for 2 lbs. 2 $\frac{3}{4}$ oz. of wool, costing the producer just 17 $\frac{1}{3}$ cents! A blanket weighing 4 $\frac{1}{2}$ lbs. would be obtained for 12 lbs. of wool, costing 96 cents!

Does this sound a little like dreaming, Sir? I ask you to carefully examine the premises, and see if there is any escaping from these conclusions!

Will the South continue to slumber on, thus throwing away the fruits of her industry? Do you tell me that her people know nothing about manufacturing, and have no taste for it? The necessary knowledge is as readily acquired by a Southern as a Northern man; and when that is obtained, and there is a prospect of *profit* ahead, the *taste* will not long be wanting! You have the capital: you have natural facilities to an unbounded extent both to propel the machinery and produce the staple. What more do you want? What more can you ask? A joint stock association of planters, at any suitable point, might cause a manufactory to be erected worth say \$25,000, under the direction of a skillful and experienced machinist. This would turn off, say, 500 yards of cloth per diem. If the machinery was in all respects good, and the water-power sufficient and unfailing, a competent and responsible Northern manufacturer could be obtained (if desired), to take the establishment, furnishing hands, &c., and work the wool furnished him into cloth of the kind before described—containing about the same stock with Welsh plains, and fitting it for mar-

* After a sufficient number of fibres have been torn up from the threads by the teazles or cards of the "gig-mill" to form a sufficiently thick nap on the surface, these fibres are cropped or "sheared" by a machine for that purpose; and in superfine cloths the process is several times repeated, each time cutting off an additional portion of fibre, which is called "flocks." A dishonest custom now prevails among some manufacturers of working these flocks again into the body of the cloth to give them weight, denseness, and apparent firmness. By this means the gigging and shearing process can be continued on thinnish cloths until a beautiful surface is obtained, without the additional thinness and lightness consequent thereon being apparent to any but an experienced eye. Sheep's grays and other coarse cloths are gigged and sheared but slightly. In some manufactories the former process is altogether omitted, and the cloth is simply "brushed" prior to shearing. Such cloths are stronger, but do not look as well.

† Say of the quality of common South-Down and Native and Long wools, with a sufficient dash of Merino blood in the last to make them carding-wools, and to bring them to about the same fineness with the first named.

ket, for eight or nine cents a yard.* I know of a manufacturer, at no great distance from me, who thus takes a manufactory worth perhaps \$8,000 or \$10,000, and furnishes the cloth (of the above stamp,) fitted for market, for nine cents a yard, the owner furnishing the wool, the use of the manufactory, and the dyeing matter.† The supply of water at this establishment fails during two or three months each year; and one competent to judge informs me that seven cents would be better pay per yard, if the machinery could be kept in motion the year round. It is probable that it would cost rather more at the South to provide the necessary fixtures, obtain machinery, etc.; and it would also cost more, for a period, to carry on manufacturing, from the greater difficulty of obtaining operatives in case of losing any of those attached to the establishment. All these disadvantages, however, not of much importance at the first, will soon disappear. Slaves should, as rapidly as the nature of the case admits of, be converted into operatives, and when the number becomes once adequate to the end, it might be indefinitely multiplied, without those embarrassments which so commonly attend the attempt to mingle white and black labor.

It is cheaper to manufacture by hand,‡ (with the exception of carding, fulling, and dressing,) than to purchase your slave cloths at present prices, *if slave costs no more than free labor.*

On the average, 15 knots of *warp*, and 15 of *filling*, make one yard of flannel about 5 quarters wide. The ordinary shrinkage of this, in fulling it into cloth, is one quarter in length and width. It would therefore require 40 knots to make a yard of fulled cloth. The carding here in small parcels costs 3 cents per pound, and $18\frac{3}{4}$ cents per pound for fulling, dyeing and dressing. In considerable quantities, the carding can be hired done for 2 cents per pound, and the other processes for one shilling per yard. Spinning (by considerable quantities and for "cash-pay,"||) can be hired done for 7 cents a *run* (20 knots) for warp, and 5 cents for filling—averaging 6 cents for both. Weaving can be hired done for 6 cents per yard (of flannel), which brings it, in the dressed cloth, to 8 cents per yard. The account would then stand thus:

| | <i>Small parcels.</i> | <i>Large parcels.</i> |
|------------------------------------|-------------------------|-------------------------|
| 1 lb. of wool | 21 cents. | 21 cents. |
| Carding same | 3 " | 2 " |
| Spinning | 14 " | 12 " |
| Weaving | 10 " | 8 " |
| Dyeing, fulling and dressing | $18\frac{3}{4}$ " | $12\frac{1}{2}$ " |
| Total | 60 $\frac{3}{4}$ cents. | 55 $\frac{1}{2}$ cents. |

Making 55 $\frac{1}{2}$ cents the price of a yard of domestic cloth, estimating the wool at market price: estimating the latter at cost of production (8 cents), the price of the finished cloth would be 42 $\frac{1}{2}$ cents per yard, and it is a better article for wear than either the Welsh plains or Chelmsfords.§

* I have no doubt it could be done at a fair profit in the North for 7 cents per yard. I am understood, of course, to mean that the manufacturer pays no rent, insurance, nor for repairs. The stockholders furnish the wool, which is worked up by the former, at the stipulated price.

† Modern ingenuity has reduced the expense of this to a mere trifle. Most of the "sheep's grays," you have observed, are of ferruginous hue. Those of this color are dyed principally by *tan bark*—the bark of the hemlock (*Abies canadensis*), which is sold here at \$1.75 to \$2 a cord!

‡ I am aware that to "manufacture" is to *make by hand*, but I use the word in its popular and more general signification. It would have been better to have compounded a word from the Latin *machina* and *facio* (machinifacere?) to signify *made by machinery*, and thus expressed the two ideas by properly derived and definitive words.

|| This word "cash-pay" is one of mighty import in the regulation of prices in the interior, where a very general (but now decreasing) system of barter prevails, and under which Wealth too often dictates to Want *what* it shall receive for its labor, and also prescribes the *prices* of the commodities in which it pays.

§ Home-made fabrics are usually stronger and wear better than those made by machinery, (for, in other words, *manufactured* cloths outwear *machinifacured* ones!) but this is not necessarily so. The several processes *can* be done undoubtedly, and probably, generally are more perfectly by machinery than by hand. But in machine-made cloths the yarn is commonly spun finer, so there is less stock in a yard. And they are submitted to processes, described in a previous Note, which farther impair their strength.

\$1,500 will set up a carding and cloth-dressing factory, which, with three good hands, will turn off 50 yards of cloth per diem. By Table I. it appears that in 1839 there were but 114 of these factories south of the Potomac and west of the Mississippi, doing an annual business of \$320,938, while in the single State of New-York there were 323 factories, doing an annual business of \$3,537,337 ! Of the 114 Southern factories 66 were in the States of Kentucky and Tennessee; 41 in Virginia; 3 in each of the Carolinas; 1 in Georgia, and in the remaining four, *none* !

The number is decreasing in New-York, as manufactories of the common fabrics, worn by farmers and other laboring men, are increasing in every direction—many of them doing custom-work either at the halves, or at a fixed sum per yard—and all of them exchanging cloth for wool. By either of these methods, the cloth can be obtained as cheaply, perhaps cheaper, than to manufacture it in families. But circumsstanced as you are at the South, you can, as before asserted, manufacture more cheaply by hand (excepting carding, fulling and dressing), than to import your slave cloths at present prices, if provided with factories to perform the expected processes. Where the institution of slavery exists, and where spinning, weaving, etc., can be done in those intervals of bad weather when the time of laborers would otherwise be entirely thrown away, it is doubtful whether any extension of even the coarse cloth manufactories would, or ought to, in an economical point of view, banish the home-made article. If we count the slave labor thus *saved* one-half the value of free labor, and dispense with the fulling and dressing* (which we usually dispensed with in manufacturing *domestic* slave cloths, in the interior of the Carolinas, Georgia, etc.), the cloth would cost but 20 cents a yard, and the dyeing might carry it to 22 cents. Let one-half the fabric be made of cotton, and the cost would be still farther reduced.†

Since the above was written, I have received the samples of Welsh plains, Chelmsford plains, and slave blankets forwarded by you. None of these goods *exceed* in quantity the estimate I have put upon them in my preceding remarks.

The Welsh plain which you state cost 65 cents per yard by the piece, (32 inches wide,) is about the thickness of rather heavy—but not the heaviest—sheep's gray. It is not, however, by many shades, so close and firm a cloth, for the want of equal fulling; and perhaps even this would not give it equal firmness, by reason of the *loose twist* of the yarn. The yarn is considerably coarser, (larger in diameter,) than that ordinarily employed in sheep's gray—but it derives no inconsiderable portion of its bulk (which gives the cloth its thickness) from the loose and imperfect manner in which it was twisted in spinning. This is particularly the case with the *filling*, which you can scarcely detach from even so open a web, without its breaking in pieces. Accordingly, the cloth tears very easily *lengthwise*, for that presenting such an *apparent* amount of stock.

With a sufficient amount of fulling, dyeing, (it is white,) and a little gigging and shearing—or simply brushing—it would become identical *in*

* But still you want carding-machines, to card the wool: for, by hand, it is a slow and expensive process. † I was shown a new article of satinet a day or two since. It was double or broadcloth width, black, and the cotton warp dyed black, and could only be distinguished from a very fair piece of black broadcloth by examining the cut edge. The manufacturer stated that the cotton warp weighed but 3 oz. per yard; but I do not credit the assertion. One is strongly inclined to suspect that a cloth of this character could not have been "got up" for any very legitimate purpose, but that it belongs in the wooden-nutmeg and horn-dint category!

The ordinary satinet, when well made, is a profitable, cheap cloth.

appearance with heavy sheep's gray, excepting in the quality of the wool. That is inferior to any I ever saw in a single piece of the former. It appears to be of two qualities, the finest about like the Asia Minor or African ("Smyrna" or "Mogadore") wools; and this intermixed with occasional still coarser *sharp pointed hairs*, which could come only from an animal not many removes from the wild Argali.* In both, there is a peculiarly dry, harsh, wiry feeling, not found in North American wools, and which is more indicative of an inferior staple—of brittleness, and want of felting properties—than even their coarseness. The staple is not apparently a very long one. I conjecture that it is Iceland wool—or that, mixed with Orkney, or some of the coarsest short or medium staple wools of Scotland.

The Chelmsfords, (31 inches wide,) twilled, undyed,† cost, you inform me, 58 cents per yard. The plain article, (*i. e.* untwilled,) 28 inches wide, costs 50 cents per yard. The sample of the twilled, forwarded by you, is a thicker, decidedly stronger cloth, with larger and far more tightly twisted yarn, than the sample of Welsh plains. The wool is of about the same quality, though at first view it strikes you as decidedly coarser, as the longer nap shows more of the coarse fibres on the surface, and these are rendered more conspicuous still by their variety of color. But on resolving portions of each cloth back into unmanufactured wool, I can detect little or no difference in its fineness, unless it be that the stock of the Chelmsford plains possesses none of those peculiarly coarse fibres or hairs which characterize the other. The wool used in the Chelmsfords is apparently of a longer staple. It is probably South American, though it may be Smyrna or Mogadore, as it bears a strong resemblance to the wool of the broad-tailed sheep of Asia and Africa. You state that the Welsh is generally thought to outwear the Chelmsford plain. This may be true of the ordinary articles, but I think it cannot be of the samples forwarded. Of these, the latter possesses nearly double the strength of the former, and is much the heaviest cloth.

The slave blanket, 6 feet 11 inches long, by 6 feet 5 inches wide, weighing $4\frac{1}{2}$ lbs., you state cost about \$3 $12\frac{1}{2}$ by the piece (a piece containing 16 blankets costs \$50). It is manufactured of a very coarse and a long stapled wool—not much fulled—with a long nap raised on both surfaces. The wool in quality resembles that used in the Chelmsfords.

On the receipt of these samples, I forwarded a specimen of the Welsh plains to two manufacturers of experience and perfect pecuniary responsibility, asking them at what price per yard they would contract to furnish me 100,000 yards of cloth of the same style and equal quality with the sample. The question was put to both of these gentlemen and received by them, as purely a commercial one—the opening of a commercial negotiation. Each stood ready to enter immediately on the fulfillment of a contract, based on his offer.

The following is the answer of one of the above named gentlemen :

HENRY S. RANDALL, Esq.

MORRISVILLE, N. Y., April 20, 1847.

Dear Sir : Yours of the 13th is at hand and duly noticed. I have no wool of the quality of the sample sent, and do not wish to work foreign wool. I would like to make for you 100,000 yards like the sample, out of our American or domestic wool. I would make it as thick and tight as the sample sent, 32 inches wide, at 40 cents per yard. I could not say how much less it would cost to get up the article from the same kind of wool with that used in the sample. I do not know what that kind of wool is now worth in market. I have not worked any of it for two years past.

Yours, truly,

C. TILLINGHAST.

* Many of the unimproved breeds have, as is common with wild animals, a coating of hair over a finer pelage beneath, and it is difficult to perfectly separate them.

† A small portion of the wool employed in the filling is black, giving the cloth a dirty drab or ash color. But this I take to be the natural color of the wool.

The first answer of the other manufacturer, S. Newton Dexter, Esq. of Whitestown, Oneida Co., N. Y., (head of the Oriskany Manufacturing Company,) it is not necessary to transcribe entire. Mr. Dexter informed me that his machinery is calculated for the manufacture of fine cloth; that the carding of coarse wool would injure his cards; that its manufacture would throw him out of his regular course of business; that he had no wool of the quality used in the sample on hand; that he should be compelled to use domestic wool; and that for these reasons and some others named by him, he could not undertake to fill the contract at less than 42 cents per yard—which he knew would be considered a high price.

Mr. Dexter being a gentleman equally distinguished for his correct and able business character, and for that capacity and range of information which give value to his opinions on all the topics connected with this investigation, I addressed him a second communication, asking him what he could manufacture the cloth for, giving him time to procure stock of the same quality used in the sample. I also inclosed him proof-sheets of the preceding part of this letter, asking him his opinion of the correctness of my statements, in relation to the general cost of manufacturing, &c. The following extracts from his reply will be read with interest:

COL. HENRY S. RANDALL:

WHITESTOWN, April 24, 1847.

Dear Sir: Yours reached me on Wednesday. There is no doubt at all but what if I felt certain that wool could be procured of the quality of which your sample was made, at a price proportionably low, I could have afforded to have manufactured the cloth at 37 cents per yard, as well as at 42, and use our coarse native wool, at a probable cost of 25 cents. . . . There has been an advance of more than 70 per cent. in the price of lard oil. The price a short time since was 55 cents. The last I bought cost 95 cents in New-York. Five quarts of this oil are wanted to every 80 yards of these cloths. . . . I cannot imagine where the wool was from out of which the sample was made, probably from Iceland—for I recollect some twenty years ago the Oriskany Manufacturing Company obtained just such wool somewhere, when American wool was deemed too high, and manufactured it into miserable satinets, by which they lost a great deal of money. The wool was said to have been imported from Iceland. I was one of the Directors of the mill then, but had nothing to do with "operating" it. . . .

You request my opinion as to the correctness of your statements of the probable cost of Welsh plains, &c., and generally of the statements put forth by you on the subject of woollen manufactories. I am not *very good* authority as to the cost of manufacturing coarse woollens, never having done much in that way. I am free to say, however, that your estimates may generally be relied on. Certainly you have allowed liberally for what would have been the cost of such wool by the pound last year; but I think your estimate of 17½ oz. of wool in the fleece, out of which to manufacture one yard of cloth 32 inches wide, similar to the sample inclosed in your letter, too low. I should think it would certainly take 20 oz., or 1¼ pounds. The allowance of 11 cents for manufacturing will, I am inclined to think, pay charges, but it will not afford any profit, nor interest on capital, nor leave anything for keeping machinery in repair. It is a very close calculation, when fuller's soap, lard oil, &c., are so high.

The sheep's gray cloths that you speak of, you will observe, are generally not quite ¾ wide—say 26 inches—while the sample you sent me was 32 inches. One pound of well washed fleece wool will make a yard of sheep's gray of medium quality; but unless the goods are *flocked*, the calculation is a very close one indeed.

I am inclined to think that you overestimate the profit of manufacturing woollen goods, although I admit that in well-managed institutions, that have the most improved machinery, with an abundant capital, the profits have, at times, been very large indeed, and our friend Samuel Lawrence, of whom you speak, is the most prominent example of such a manufacturer within my knowledge. . . . Every new manufactory erected, if built with judgment, has one advantage over those already in operation, and that is, they have availed themselves of all the improvements of those in operation. And as machinery is constantly being produced at cheaper rates, a factory of increased capacity will probably have cost less money. . . .

The Oriskany Manufacturing Company is the oldest company now manufacturing woollen goods in the United States. They have made satinets which have sold readily at \$3.50 per yard, and have made cloths which have as readily sold for \$12 per yard. Satinets full as good can now be bought at 75 cents, and handsomer, if not better cloths, for \$3. What a change is here! And yet the Oriskany Manufacturing Company was perhaps never doing better than now. This Company availed itself of the opportunities offered last year to obtain wool very low, to purchase a supply for nearly two years. This year the business will be good, that is, pay a profit of 10 per cent. on investments, even where wool is purchased at current rates; but I do not believe it will pay more. I will furnish you with a brief estimate:

| | |
|--|-----------|
| A mill with a capital of \$100,000 will manufacture, say 90,000 yards of 6-4 cloth, which will bring in market an average of \$1 50 per yard, or | \$335,000 |
| To get these cloths into cash (for they are sold at 8 months, and are charged with commission of 5 per cent., and other charges equal, in all, including interest, boxing and transportation, to 12 per cent.) | \$16,200 |
| Cost of 225,000 lbs. of wool at 30 cents | 67,500 |
| .. 3,300 gallons sperm and lard oil at \$1 | 3,300 |
| .. Soap, soft and hard | 3,500 |
| .. 800,000 reazes | 1,000 |
| .. Dyeing materials of all kinds | 11,500 |
| .. Fuel | 1,000 |
| .. Paper, tape, twine, nails, lumber, cards, candles, &c. | 3,000 |
| .. Labor, \$5,000 per quarter, or | 20,000 |
| .. Insurance | 2,000 |
| Total | \$122,000 |

If I were under oath, I do not believe I should alter any of these items—or, at least, I should add as often as I diminished, I have no doubt. You may think \$1 50 a low average for cloths, but it must be a very fair cloth to bring that sum, I assure you. You may also think 12 per cent. a high charge for getting these cloths into cash, &c., but it is scarcely what we pay. And the records of our wool book will show that 30 cents is the cost of such wool as we work. And our books will prove that it has taken, for many years past, 2½ lbs. of wool to make a yard of broad-cloth. There is 13 per cent. left for profits here, because I have not allowed one cent for repairs or taxes, or for the agents' salaries, which will swell the expenses fully up to \$124,500—within a fraction of swallowing up all over 10 per cent. . . . Well, I admit that 10 per cent. is a great business; but you speak of 15, and that is going too far. . . .

Very respectfully your friend and obedient servant,

S. NEWTON DEXTER.

It will be seen from the foregoing letters :

1st. That where their machinery is adapted to it, manufacturers are willing to make and sell goods of the same amount of stock and style of manufacture, with Welsh plains, out of *domestic wool* for 40 cents per yard; and that manufacturers of perfect pecuniary responsibility are ready to contract so to furnish it. This (apart from the small item of transportation) is *twenty-five cents* per yard, or about *thirty-nine per cent.* cheaper than you now obtain these cloths: and an article manufactured from domestic wool would, by reason of the far superior *strength* and *felting property* of the stock, be much stronger and more durable than the foreign goods.

2d. It will be farther seen that a skillful and responsible manufacturer would furnish cloth, corresponding with Welsh plains, at 37 cents per yard, could he procure the same quality of wool now employed in the manufacture of those cloths at a price proportionably low with domestic wools, calling the latter 25 cents per pound.

Blankets are manufactured at equally exorbitant profits; and the Chelmsfords, paying less transportation and no duties, approach the same standard of profit—though, judging from your samples, I consider them the cheapest goods.

I have given Mr. Dexter's undoubtedly fair and candid statements in the premises—my object in these letters being, as I once before have stated, to arrive at *truth*, and not to support a favorite hypothesis, or to maintain, at all hazards, preconceived views.

My own estimates and those of Mr. Dexter, of the actual cost of manufacturing Welsh plains, it will be seen, differ—but not so materially as would at first appear, when the advance of wool, soap, oil, &c., are taken into consideration. I have no doubt that, in making his estimates, he had his eye more on the better and more elaborate machinery of his own mills—the more expensive and perfect performance of the various manufacturing processes common in that class of establishments, than on the cheaper machinery and processes necessary in the manufacture of coarse goods. My estimates, or rather statements of cost of manufacturing sheep's gray, you will recollect, were given on supposed *actual knowledge* of what a manufacturer of these goods *had made them at*. To these Mr. D. seems to take no exceptions.

In relation to the shrinkage of wool, Mr. Dexter undoubtedly bases his

opinion mainly on his own experience in manufacturing broad and other cloths of fine quality. In these, the shrinkage of the wool from the fleece is concededly at least *half*. And the firm, well finished and honestly made Oriskany cloths, I have no doubt require the highest rate of shrinkage in the stock. But Mr. D. concedes that a "pound of fleece wool will make a yard of sheep's gray of medium quality." Now the Welsh plain, of the quality of the sample, weighs 13 oz. per yard. As I have already stated, "the ordinary weight of the sheep's gray is from the weight of the Welsh plain to 16 oz. per yard." Thus a yard of "medium" sheep's gray outweighs a yard of the Welsh plain. If this is so, the former, of course, requires the greatest amount of stock, the mere *width* making no difference whatever. Mr. Dexter was led into this error, evidently, by overestimating the *weight* of the Welsh plains—and this arose from the smallness of the sample submitted for his inspection.

His statement of the cost of manufacturing broadcloths by the Oriskany Company is entitled, I have no doubt, to the fullest reliance. In consequence of his remarks on this topic I have changed a statement in the preceding part of this letter alluded to by him, for fear it might convey an erroneous idea. Where I spoke of "existing establishments declaring dividends of *fifteen* per cent.," I have changed it, so that it now reads "from *ten* to *fifteen* per cent.," these being the dividends, respectively, of the Oriskany and Middlesex* Companies last year, and exhibiting about the *range*, probably, of well-managed companies.

* Mr. Lawrence's great establishment at Lowell, which works up 1,700,000 lbs. of wool per annum.

BAY-SIDE FARMING IN MARYLAND.

THE region referred to in the following, lies, as will be seen, in Talbot County, Maryland, and perhaps no district of equal extent contains a larger proportion of *cultivated cultivators*.

For years past they have been known to display an exemplary solicitude on the subject of *accumulating manures*. Their practice may be said to be distinguished for perseverance and success in this branch of rural economy, and especially as it relates to the management of their cattle in the summer season. It gives us pleasure to be enabled to present here the results of their diligence and good management in these respects. An estimate of the average crops of the district would have made the Report yet more satisfactory.

Hon. JOHN S. SKINNER:

TALBOT COUNTY, 20th April, 1847.

Dear Sir: At the last meeting of the Board of Trustees of the American Agricultural Society for the Eastern Shore, the following Report having been read, it was

Resolved, unanimously, That it be published in the Maryland Farmer and in The Farmers' Library.

Respectfully,

M. TILGHMAN GOLDSEOROUGH, Secretary

The Committee on "BAY-SIDE FARMING," appointed by the Trustees of the Agricultural Society for the Eastern Shore of Maryland, beg leave to report, in part:

That they have had the interesting subject referred to them under consideration for several months past, and have found some difficulty in their investigations, in consequence of the want of facts on which they can rely. They have, at last, been obliged to depend upon tradition and their own limited observations.

That great improvements have been made in the Agriculture of this beautiful region is manifest to all who have any acquaintance with it, and your Committee will endeavor to show how they have been brought about.

The waters of the Chesapeake Bay, Miles River and Choptank, nearly embracing this peninsula, afford large annual supplies of sea-ware, or sea-ores—and their banks contained large quantities of decomposed oyster-shells, now nearly exhausted. It is believed that the

first man in the district who used sea-ores to any considerable extent, as manure, was the late Lloyd Tilghman, Esq., as far back as sixty years; but he does not appear to have had many immediate followers. About thirty years ago much attention was drawn to crops of corn and wheat grown by Mr. William Hambleton, on land proverbially poor; principally by the use of these materials, aided by a well-littered farm-yard. This example had a powerful effect. It showed, clearly, that increased products were within the reach of all; and the use of these valuable articles, so long neglected, extended rapidly. Wherever they were within reach they were used, and invariably with success. Many who had no bank-shells resorted to lime from oyster-shells collected from creeks and rivers washing their shores, and this practice still continues with good effect.

The confining of cattle during the whole of the winter season on large accumulations of rich earth, pine rushes, straw, &c., in yards with permanent or temporary shelters, about the same time became more general, and appeared to suggest the penning of them on similar heaps during the summer—now almost universal.

Your Committee consider this a great improvement on the "ambulatory" cow-pen of the last generation.

The pen is generally from thirty to forty yards square—half-worm fence staked and capped, with bars or a rough gate; a good foundation of marsh or rich soil is covered over with pine rushes ready to receive the cattle in May. In this pen they continue to be confined every night until late in October, the pen receiving fresh stuff about once a fortnight. In this way the bank, under favorable circumstances, becomes more than two feet deep, and is hauled out before winter, when the fields are firm, ready for spreading in the spring. Such a heap, with the winter crop of manure, is frequently sufficient to dress over the field intended for corn. The pen is generally made in that field, and supplies of earth are obtained from the woods and from turning rows, or low places plowed up as drains, wherever required. In lands so level as those in the Bay-side, the removal of the rich soil on a head-land is important; it acts as a broad though shallow ditch, and discharges much water after heavy falls of rain, while the leads serve to conduct it off without obstructing cultivation. They are generally about three feet wide and the usual depth of plowing.

A little more than twenty years ago the rich deposits of earth found at the heads of creeks began to be hauled out as manure. It appears wonderful that these natural compost beds should so long have been overlooked. They have been used to great extent and with unfulfilling advantage.

No marl has been found in the district, except in the neighborhood of the Royal Oak, on the lands of Major Dawson, Captain Mc-

ter and Mr. Townsend, who use it with much success.

Our waters afford an annual supply of fish-manure in the Skate. They arrive, unfortunately, at a busy season. Some are taken by farmers who have seines, while others buy of those who make a business of catching them for sale.

Ashes and guano in a few cases have been imported from Baltimore and applied with satisfactory results. Ashes can be laid down on our shores at a cost of 12½ or 13½ cents. An enterprising practical farmer, Mr. Edward Covey, last year purchased and applied no less than 5,500 bushels, and this after ascertaining their value from several years' experience. Your Committee consider this a fact of great value. It is difficult to introduce manures which require a direct outlay of money; yet it is obviously proper, by all reasonable means, to enrich our lands that our labor be not wasted.

The manner of using sea-ores is various. Some put them in large heaps to be distributed at leisure; others dress their cow-pens with them, or drop them in the field to be spread at some distant day. The best way is to double-list* them in at once on corn land to be crossed and planted next spring; thus evaporation is avoided and labor saved.

Your Committee think it unnecessary to describe the mode of cultivation farther than to remark that it is much more thorough than formerly, and altogether in ridges. Few omit to sow clover-seed; but little clover is cut for hay. It is either grazed off or turned in. Plaster of Paris is not used, no benefit having been found from repeated experiments.

The four-field system, without fallow, is thought to be the best for the improvement of land, a field of clover lay to be added when in sufficient heart to bear the change—making one in corn, two in wheat and one in pasture. This is believed to be the most profitable course of husbandry, and is followed by the best and most successful farmers in the district. The old modes of securing the corn crop and fodder still continue. The seeding of wheat commences the first week in October and ends early the next month. Some of those who have no fallow are enabled to house their corn before they begin to seed wheat.

In conclusion, your Committee, in the absence of records of crops, are under the necessity of resorting to conjecture; and they hope that they will not be deemed extravagant when they express the opinion that the products of the Bay-side district have been, within the last twenty or thirty years, quadrupled.

All which is respectfully submitted.

S. HAMBLETON,

W. H. HARRISON.

Talbot Co., Md., Feb. 15, 1847.

* In this level country the cultivation is uniformly in narrow ridges, and the backing of four furrow-slices together in the furrow between two of the ridges is called "Double-Listing."

FATTENING CATTLE.

A DISSERTATION ON THE PHILOSOPHY OF FATTENING CATTLE...PART II.

Much discussion has arisen between Mons. Dumas and Baron Liebig respecting the formation of fat; the French philosopher maintains that the vegetable which is partaken as food by the animal, possesses, already formed in its structure, all the fat which is absolutely essential for the animal; and that, like the gluten which is necessary for the formation of muscular or fleshy fibre, the phosphate of lime for the bones, and the starch or gum for the formation of animal heat, the fat which is contained in the vegetable is destined to supply the fat in the animal body.

On the contrary, Baron Liebig contends that if the animal is properly supplied with a greater quantity of the non-nitrogenous constituents of the food—viz. the sugar, starch, and gum, than are necessary for the proper supply of the demands in the animal heat, they become converted into fat in the animal economy. I am inclined to support the hypothesis of Mons. Dumas; for, in my humble opinion, I think it both simple and beautiful; and, if we take into our consideration the

animal in its primitive and original state, I conceive the accuracy of the theory cannot for a moment be questioned. But we must remember that the great quantity of fat we see accumulating in those oxen, sheep, and other animals, which we keep confined in our stalls, originates from an abnormal condition of the system, and is produced by the circumstances under which the animal is placed; and as such, in addition to the fat already formed in the vegetable, the animal possesses the power of secreting an additional portion of fat from the food which it consumes. The earthy and saline substances which are contained in the crops themselves have very important duties to perform in the animal body; thus, for example, they afford a supply of phosphate of lime for the due formation of bones, as well as the saline particles which are constantly present in the blood, flesh, softer tissues, and secreted fluids of animals. How far the ordinary cultivated crops are capable of properly answering the functions thus required of them, you will see on referring to the following Table:

TABLE III.
ON THE AVERAGE COMPOSITION OF CROPS.

| 100 Parts, | Water. | Woody Fibre. | Starch, Gum, or Sugar. | Gluten and Albumen. | Fatty Matter. | Saline Matter. |
|-----------------------|----------|--------------|------------------------|---------------------|---------------|----------------|
| Wheat contain of..... | 16 | 15 | 55 | 10 to 15 | 2 to 4 | 2.0 |
| Barley..... | 15 | 15 | 60 | 12 | 2.5 | 2.0 |
| Oats..... | 16 | 20 | 50 | 14 | 5.6 | 3.5 |
| Beans..... | 16 | 10 | 40 | 28 | 2 | 3 |
| Peas..... | 13 | 8 | 50 | 24 | 3 | 2.8 |
| Potatoes..... | 75 | 5 | 12 | 2 | 0.3 | 1 |
| Turnips..... | 85 | 3 | 10 | 1 | ? | 1 |
| Carrots..... | 85 | 3 | 10 | 2 | 0.4 | 1 |
| Meadow Hay..... | 14 | 30 | 40 | 7 | 2 to 5 | 5 to 10 |
| Clover Hay..... | 14 | 25 | 40 | 9 | 3 | 9 |
| Pea Straw..... | 12 | 25 | 45 | 12 | 1.8 | 5 |
| Oat Straw..... | 12 | 45 | 35 | 1.3 | 0.8 | 6 |
| Wheat Straw..... | 14 | 50 | 30 | 1.3 | 0.5 | 5 |
| Barley Straw..... | 14 | 50 | 30 | 1.3 | 0.8 | 5 |
| Buckwheat..... | 18 | 18 | 45 | 10 | 2.6 | 2.3 |
| Maize..... | 13 | 16 | 51 | 10 | 5.6 | 2.5 |
| Rice Dust..... | 14 | { 77 } | | 2 | 5.2 | 2.2 |
| Linseed (good)..... | 10 | { 27 } | | 22 | 36 | 4 |
| Oil-Cake..... | 15 to 20 | 15 to 24 | 30 to 50 | 12 to 22 | 5 to 14 | 5 to 10 |

You will easily perceive from this useful Table, that 100 parts of the various species of crops grown by the farmer contain very variable proportions of dry solid food; thus, in order that the animal may obtain the same equivalent of dry food as 100 lbs. of hay would produce him, he must consume not less, but probably more, than 600 lbs. of Swede turnips or carrots, or 300 lbs. of po-

tatoes; but of this dry matter, you will please to bear in your recollection, the composition exerts a very material influence over its value as food. I have described the manner in which the gluten, casein, and albumen of the vegetable are converted into the blood, flesh, softer tissues and fluids of the animal; hence young animals which are supplied with food containing much of these muscle-forming

principles are found to grow rapidly, and their muscular frames will be duly developed; but, unless they are liberally supplied with such substances as fat, gum, and starch, by which the animal heat is formed and kept up, the animals will be muscular, but utterly unfit for the butcher's purpose. It is a very common practice to feed young growing pigs upon the refuse of the slaughter-house, in some places, such as the blood and intestines of the slaughtered animals; and in France, many hundreds of pigs are annually fed upon horse-flesh; these pigs grow rapidly, and their muscular frames are finely developed, but they do not become fat, unless they are properly supplied with a liberal portion of non-nitrogenous food, such as potatoes or meal would yield.

As it is only from the nitrogenous constituents that muscle is formed, it has been supposed that the quantities of these substances contained in any given article of food would be a fair estimate of its feeding value; and, under this supposition, Mons. Boussingault has constructed some Tables of the proportion of nitrogen contained in different vegetable substances. The late Rev. W. Rham has published in *The Journal of the Royal Agricultural Society of England*, some Tables of the relative value of different kinds of food as arrived at by practice; but all such Tables must, to a certain extent, be arbitrary, inasmuch as the quantity of these animal substances consumed by the animal must be influenced by circumstances; the animal taking active exercise requiring a much larger quantity, in order to supply the natural waste which would occur under these circumstances, than if the animal was at rest.

We have also seen that the starch, gum, and sugar of the vegetable supplies the constituents by which the heat of the animal is maintained; and as this heat never varies during health, whatever variation may occur in the temperature of the atmosphere or apartment in which they are placed, it follows that the lower the temperature, the larger will be the quantity of carbon consumed in the animal body; this increased consumption arising from a larger portion of oxygen being introduced into the body during cold weather, than when the temperature of the atmosphere approaches nearer that of the animal: hence, animals will consume a larger amount of food during the winter months than in the summer season, and those which are exposed to the chilling blasts of winter, more than those fed in sheltered situations, warmth being equivalent to a certain supply of food. With this remarkable fact before us, we cease to be surprised at the enormous quantity of train-oil and fat which is consumed by the Greenlanders, while the inhabitants of the tropics exist upon fruits and light, farinaceous diet. In the former, the surrounding atmosphere is constantly robbing the body of its heat; while in the latter the temperature of the air approaches so near to that of the body that a

little additional heat is sufficient to maintain the requisite temperature. Exercise, also, by increasing the number of inspirations, introduces into the body a larger amount of oxygen than would otherwise be inspired; and as this never leaves the body without undergoing a change, it follows, as a matter of course, that the greater the number of inspirations taken within a given time, the larger will be the demand for food to supply the consumption in the body. Hence we find that an increase in temperature, with diminished exercise, tends to lessen the quantity of food consumed, and also to increase the weight of the animal. This fact was clearly proved by Mr. Childers in feeding sheep. In this experiment he selected from his flock forty sheep, and divided them into two lots of twenty each; one lot was left in the field, which had a dry and sandy soil; the other lot was placed in a shed, upon a floor made of pine-planks, in order that they might be kept dry, the floor being swept once a day. The experiment commenced on the first of January, when the twenty sheep in the field weighed together 134 stones 4 lbs., while the weight of those placed in the shed was 133 stones 3 lbs.; each lot had as many turnips as they could eat, which averaged 27 stones per day; each sheep was also allowed in addition, half a pound of linseed-cake, and half a pint of barley per day, with a little hay, and unlimited supply of salt. For the first three weeks each lot consumed equal portions of food; but in the fourth week, the sheep confined in the shed ate a less quantity of turnips, by three stones per day, than those in the field; and on the first of February they had gained in weight 21 stones 11 lbs., while those in the field had only gained 15 stones 14 lbs. By the ninth week of the experiment the sheep in the shed had diminished their consumption of turnips two stones more, and also three pounds of linseed-cake per day; and on the first of March the shed-fed sheep had gained 10 stones 10 lbs. more in weight, while the sheep in the field had only gained 3 stones 8 lbs.; and at the end of the experiment, on April the 1st, the shed-fed sheep had gained in the last month 23 stones 15 lbs., or in the three months 56 stones 6 lbs., while the sheep in the field had only gained 12 stones 10 lbs. in the month, or in the three months 36 stones 3 lbs., making a difference in favor of the shed-fed sheep of nearly twenty stones; the sheep in the field consuming the same quantity of food during the whole time of the experiment. In this experiment we have convincing proof that the quantity of food required by an animal will be less in proportion to the increase of temperature; and that when a liberal diet is allowed, but without shelter, much of the constituents of the food will be consumed to keep up the heat of the animal, which would be otherwise stored up in the body as fat, if no such cause of waste existed; and hence to the influence of cold is to be attributed the

difficulty of fattening animals in cold weather, or in bleak, unsheltered situations.

I may here state to you some experiments which were made by that truly philosophical agriculturist, Mr. Morton, at Earl Ducie's farm, at Whitfield, as illustrative of the effects of an increase of temperature and diminished exercise upon the feeding of sheep. In the first experiment five sheep were fed in the open air, between the 21st of November and the 1st of December; they consumed 90 lbs. of food per day, the mean temperature of the atmosphere being 44° of Fahrenheit's thermometer; at the end of this time they weighed 2 lbs. less than they did on the 21st of November. In the second experiment, five sheep were placed under a shed and allowed free motion, the mean temperature being 49°; they consumed at first 32 lbs. of food per day, then 70 lbs.; at the end of the experiment they had gained in weight 23 lbs. In the third experiment, five sheep were placed in the same shed, but were not allowed to take exercise; they ate at first 64 lbs. of food a day, then 53 lbs., and increased in weight 30 lbs.

Darkness, in combination with rest and warmth, tends mutually to facilitate the fattening process, by removing those causes of excitement which might otherwise exist, and which would tend to an increased consumption of carbon or fat-forming principle in the lungs. It is well known to the practical farmer, that restless animals consume a larger quantity of food, and fatten much slower, than those of a quiet disposition; and as it is the object of the feeder to produce the largest weight of flesh with the smallest quantity of food, all those collateral circumstances should be attended to which will facilitate the attainment of the desired object.

Another important point to be properly attended to in the management of cattle is the regularity of their feeding; inasmuch as the gastric juice is secreted by the glands of the stomach at the accustomed time of feeding; and therefore, if there is no food for it to act upon, it irritates the coats of the stomach itself, producing a degree of inquietude and restlessness which is highly injurious, and tends to check that steady progress of the animal which it is so desirable to maintain. M. Von Thaër, in his work on "The Philosophy of Agriculture," informs us that, in fattening, care should be taken to maintain a uniform and, particularly in winter, a somewhat high temperature. Light must be intercepted; for just in proportion as it keeps up the due health of cattle, so does darkness accelerate the attainment of the required degree of fitness. The repose and contentment—the happy freedom from anxiety, arising from the certainty of receiving their food in proper time and measure—contributes so much to the fattening of cattle that a much more plentiful supply, given irregularly, cannot make up for the want of order. The hour for feeding, and the quantity of food,

may be variously regulated, but a system when once adopted should be strictly adhered to.

The saline and earthy matter contained in the food is by no means an unimportant feature. The animal, it must be borne in mind, requires that the food or plants upon which it lives should supply phosphate of lime for the due formation of its bones, and saline matter for the blood; and it is a truly beautiful provision of Nature, that plants will not grow in soils which are destitute of those constituents required in the economy of animals: hence the advantages which are derived from the employment of such manures as bones, guano, Croggon's and other saline manures, or the urine of cattle, &c., in the growing of our commonly cultivated crops.

The due proportions of which these different constituents of the food are required by the animal, vary at different periods of its growth, and also at different stages of its approach to that degree of fitness which fits it for the shambles.

In the young and growing animal, there will be a much larger demand on the food than there would be in after-life. The muscles require to be enlarged by the addition of more gluten or muscle-forming principle than would be necessary to compensate for the natural waste which is continually going on in the body, and the food must supply an increased quantity of phosphates for the growth of bone; the lungs are more active, and a greater number of inspirations are made in a given time, by which more carbon is consumed; hence the necessity of supplying the growing animal with a richer and far more nutritious diet than would be required by the adult, and of feeding at shorter intervals.

Nature has prepared in the milk of the maternal quadruped a species of food suitable to the wants of the young animal; and a glance at its composition, which is pointed out by chemical analysis, will soon convince us how admirably it is adapted to fulfill the purposes in the animal economy:

TABLE IV.
COMPOSITION OF MILK.

| | |
|-------------------------|-------------|
| Butter | 27 to 35 |
| Casein or Cheese..... | 45 to 90 |
| Milk sugar..... | 37 to 50 |
| Phosphate of lime | 3 to 10 |
| Salts | 7 to 10 |
| Water | 88.1 to 805 |

The sugar of milk, with the butter, supplies the materials which are consumed in the lungs of the young animal, by which the animal heat is properly kept up. The casein, or cheesy matter, yields the materials for the growing muscles, and the gelatine of the bones; while the phosphate of lime, dissolved in the water, supplies the earthy matter for the bones. The quantity of milk, and the proportions of the ingredients which it contains, vary with circumstances, such as the breed of the cow, the food with which she is supplied, the time of her calving, her age,

and state of health. It is also materially influenced by the temperature of the atmosphere; warmth producing similar effects on the composition of the milk as on the fattening of the animal; the colder the air, the less butter will the animal yield in her milk. This fact is well known to farmers, the cause being the larger consumption in the lungs of the animal (to retain its heat against the cooling influences of the external air) of those principles in the food from which the butter is formed. As an illustration, I may quote an account of an experiment made under the directions of that practical agricultural chemist, Mr. Gyde, and which is well worth your notice.

"Six cows, during the warmest part of the summer of 1844, when in the field, yielded, on an average, 14 quarts of milk each; as the season advanced and the weather became colder, the quantity of milk steadily diminished, and of course with it the butter. In the early portion of November, four of the six cows were placed in a house, the floor of which was boarded in order to keep them dry. Light was nearly excluded, and the mean temperature of the house was kept at about 55°, the animals having barely enough room to lie down in their stalls; their diet was composed of cut turnips, hay, chaff, and a little ground lentil mixed with the chaff. For the first few days the animals were evidently uncomfortable in their new habitation, and their yield of milk diminished. At the expiration of three weeks the milk had again increased, and the quantity given was equal to that of the best yield of the summer. By the middle of December—the cold being then intense in the open—the cows gave 18 quarts each of rich milk, from which a proper quantity of butter was made. Animals when yielding milk require a richer food than when they are dry, since it is from the food taken that they are enabled to secrete their milk; and if their food does not contain a sufficiency of the elements required, the milk is less nutritious: hence the growth of young and suckling animals is less rapid, and its future health and strength of constitution suffer by the treatment which it receives when young. When sheep are fed upon turnips, and in winter, during the time they are giving suck, it is an excellent plan to allow a portion of oil-cake, or linseed, or pea or bean meal, as part of their daily food; such addition greatly improves the secretion of milk, the lambs grow rapidly, and fatten much earlier than when no such addition is made, and the sheep are found to be in much better condition in the spring. In the rearing of calves, likewise, it is desirable that they should have the whole milk, and not be supplied after the first two or three days with milk that has been skimmed, as is the custom in some parts of England. The practice of the late Earl Spencer, in feeding calves, was to allow them the unskimmed milk for the first three months, and afterward to give them skimmed

milk for the first three months, and afterward to give them skimmed milk mixed with barley or oatmeal; this practice was found to succeed remarkably well; but I am inclined to believe that pea or bean meal mixed with linseed would have probably been better than oat or barley meal, since the bean and pea contain vegetable casein, which is identical in composition with the casein of milk, and forms an admirable substitute for it; while the soluble gum and mucilage of the linseed would be the more easily acted on by the stomach of the young animal than the insoluble starch of the oat or barley.

In fattening calves for veal, attention should be devoted to the production of fat animals of moderate size, veal of this description being most sought after by the epicure. The animal should be kept perfectly quiet, and placed in as warm a situation as convenient, that there may be as little loss of the fat-forming principle as possible; and a gloomy situation, not amounting to actual darkness, is found, by experience, greatly to assist the above means, by inducing tranquillity and a disposition for sleep. The food should be rich, and regularly supplied, and the strictest attention to cleanliness should be observed. Bleeding is occasionally resorted to by some feeders, and its effect is to check the too rapid development of muscle, while it does not interfere with the regular accumulation of fat in the body. Animals intended for stock should be allowed free exercise, that their muscular frames may be well developed; and their food should be of a nutritious character, containing sufficient gluten to supply the full demand of their growth. They should have sheds to go into at night and during rain, with a dry bed to lie upon; animals which are so treated will grow rapidly, fatten much faster when required, and be of a stronger constitution than those fed upon coarse, inferior, and unwholesome food, which is unfit to supply the demands of the system, producing an imperfect development of the animal frame, and not infrequently engendering diseases of a troublesome and frequently a fatal character.

Time, gentlemen, warns me to conclude. I have endeavored to detail in a few words, what is known on the subjects by our best animal physiologists, who have applied their theories to the rearing and feeding of cattle. If, by the knowledge I have imparted to you in this Lecture, you are enabled to promote your own interests, and that of the public, by better regulating the treatment of your live-stock, I shall not have addressed you in vain. I am the theorist, you are the practical men; your practice and my theory (or rather the theories of sound philosophers) combined, cannot, when properly managed, but conduce to your own pecuniary benefit, and that of mankind in general. Accept my thanks for your kind attention, and, for the present, I respectfully say, farewell. *U. W. P.*
[The (London) Plough.]

IMPROVED REAPER.

McCORMICK'S PATENT VIRGINIA REAPER, IMPROVED.

"Whatever a man shall sow, that shall he reap."

The vast disproportion between land and labor, and the dearness of the latter, lead to a constant stretch of ingenuity to contrive, in every department, labor-saving implements. Our limits, too, seem to be extending yet faster than the increase of laborers, great as that is, by immigration and natural increase.

While this state of things continues, as it must do yet for half a century at least, we shall go on skinning district after district, and State after State, of their virgin fertility, just as the dairy woman passes along, skimming off the cream from pan after pan. Of most crops it is easy to, and too many do make more than they can harvest and take care of. It was, we may suppose, in view of this greedy and improvident disposition, that it was ordained, "Whatever a man sow, that shall he reap."

Some labor-saving implement has long been a desideratum for harvesting *wheat and grass crops*, particularly on the western prairies, where land is at once so cheap and so fertile. To meet this demand, Mr. OBED HUSSEY, of Baltimore, and Mr. McCORMICK, of Virginia, have been, we believe, most successful. In what consists the difference between their Reapers we are not exactly advised, and therefore not prepared to pronounce upon their comparative merits. We happen to know on good authority that Mr. Hussey's is in high repute among the working, and what is better, if better need be, the *thinking* farmers of brave "Little Delaware," and we shall be ready to make known its particular excellence, in any authentic way that he or his friends may enable us to do.

In the mean time, we have had placed within our reach the illustrations which follow, in proof of the availability and efficiency of McCormick's machine, which appear to commend it very strongly to all—of whom there are not a few—who find it much easier to sow than to reap. What is here given is taken at random from a variety of testimonials, equally particular and conclusive, contained in Mr. McCormick's hand-bill; and to these, thus selected from many, we append the statement of Mr. BATEMAN, of the Ohio Cultivator:

FRANKFORT, Clinton Co., Ia., Aug. 3, 1846.

Dear Sir: I have used your Reaper about one-half the last harvest. I cut about 90 acres. The machine did not arrive until we were half done. My wheat was lodged, the ground rough and uneven. I have never before seen as much straw on the same quantity of ground. I can hardly conceive of more unfavorable circumstances than the "Reaper" was placed under, for a trial, yet the machine sustained its previous high reputation as a grain cutter. It performs well in standing grain, or in grain that is lodged. Two hands, one to drive and one to rake, will perform with the "Reaper" as much as eight hands could do with cradles, besides saving from a bushel to a bushel and a half per acre, that any cradler would leave on the ground. The machine is simple in its construction, and not liable, when properly made, to get out of order. If it should happen, any part except the sickle, to get out of order, there is no more difficulty in repairing it than a cradle or mowing-scythe.

CYRUS H. McCORMICK, Esq.

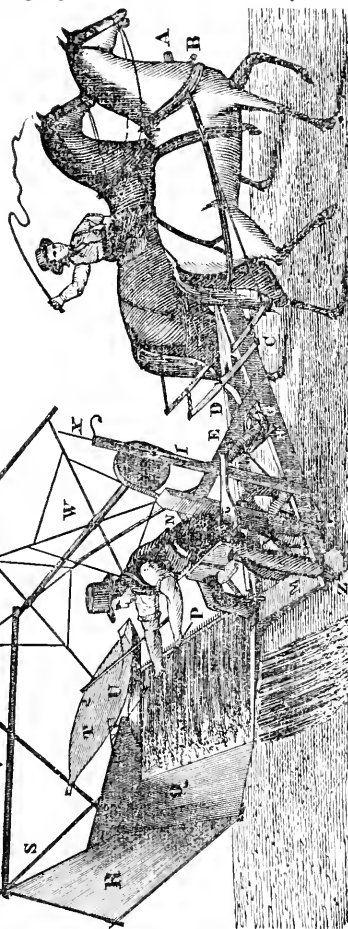
Yours,

L. D. GRIGGS.

DUPAGE, Will Co., July 22, 1846.

Dear Sir: I take pleasure in communicating to you the result of my operations with your Reaper to the present time, which, I am proud to say, has been of the most satisfactory character. I cut, in nine days, with the Reaper, 150 acres of heavy wheat, since which I have cut 50 acres, and I can say that the *work* was done *perfectly*, saving, I am satisfied, not less than a bushel

per acre; and this has been without any repairs or trouble with the machine. It would have required eight good cradlers to have cut my wheat in the time cut by the Reaper; and in addition to the cutting, the wheat was completely raked from the Reaper into gavels ready for binding.



In addition to the saving of grain and labor by your Reaper, it is worthy of remark that a very important consideration with the farmer is the cutting of his wheat rapidly and conveniently, when in a proper state for cutting, without being dependent upon hired labor, and thereby avoiding a very heavy loss from cutting either too early or too late. From these statements every farmer can make his own calculation as to the value of your Reaper. For my own part I consider it, to the Western country, the most important invention of the age, and that it will greatly increase the product of the country, not being able without it to reap so much as can be sowed.

Very respectfully, H. E. TOWNER.

P. S. The foregoing 200 acre completes my harvest of winter wheat, and I am now cutting my spring crop. H. E. T.

We take pleasure in announcing to our readers that Mr. McCormick has made such improvements in his Reaper as are found to greatly facilitate its operation, especially in the work of raking the cut grain from the platform, and that he is now engaged in manufacturing a large number of the machines at Cincinnati, for the supply of the South-western country. He assures us also that the utmost attention will be paid to the character of the workmanship in constructing the machines, so that no fault shall hereafter exist on that score.

From what we have seen of the operation of this machine, and the high testimonials from those who have used it extensively, we are confident that it will do first-rate work in good hands; and it will be seen from the advertisement in this paper that the terms of sale offer the fullest possible guaranty to purchasers. The need of machines for reaping grain was greatly felt by the farmers of Ohio last year, and we doubt not that a large number will be used at the coming harvest. Handbills giving fuller information, and testimonials of the character of the machine, can be obtained of Mr. McCormick, Cincinnati, or

at the office of this paper. We will also, if desired, order the machine, for any of our readers who may wish to obtain them.

[Ohio Cultivator.

AGRICULTURAL EXHIBITIONS—IN WHAT WAY ARE THEY USEFUL?

THEIR value is to be measured not by the number of people in attendance, nor yet by the number of things exhibited; but by the new facts and valuable addition they bring to the stock of agricultural knowledge.

If mere numbers, and admiration, and excitement, be the object, let a militia mustering be advertised at any old field X roads, take care to have a drum and fife with a sprinkling of red coats, and swords, and things that smell of violence and blood. Add to these a dozen prancing stallions, a live bear and a ring-tail tame monkey—not forgetting to have booths for sale of mead and gingerbread, with a barrel of still-burnt whisky in the crotch of a cart-tongue, and the purpose will be fully answered. The throng will be as large as any one can desire, but how many will go away either better or wiser? The whole aim of Agricultural Associations should be to increase and diffuse knowledge, and spectacles should be encouraged only as they contribute to that end.

THE PROFITS OF FARMING IN MASSACHUSETTS.

At Albany and Boston, during the sessions of the Legislature, agricultural meetings are held (at Boston, we believe, in the chamber of the House of Representatives) for the interchange of knowledge and the discussion of questions bearing on the landed interest.

A journal which should contain nothing but these discussions would be worth more to the country than the proper journals of legislation, such as they are in some States, and far more edifying than all those papers which are given up to a blind support of this party or that, and to wholesale and indiscriminate abuse of those who differ from them. How much better for members of Legislatures to be thus communing with each other, on matters of the deepest interest to themselves and their constituents, than to be lounging about from tavern to tavern and from morn to noon, drinking and gaming, or engaged in idle, insignificant jesting and ribaldry and frivolous conversation. In that excellent paper, the "MASSACHUSETTS PLOUGHMAN," we find the following. Although it would be impossible to find room for these discussions as they occur, in the numerous clubs which we rejoice to see are being formed throughout the country, we give the discussion in this case, as it relates to the great question into which all others resolve themselves after all, to-wit: THE PROFITS OF FARMING. In extending these profits and losses, we have often thought that many small items are omitted which ought to be brought into the account on the credit side of the farm.

Many of these items of rural enjoyment are, in fact, not to be had in the towns for love or money. There you can't enjoy the ripe juicy fruit fresh as you pluck it from the trees, and the fragrant strawberry as it grows upon the vine of your own planting; nor with them the rich cream of the Alderney, the pure secretion of the sweet-scented vernal grass—*anthoxanthum odoratum*. Money won't buy you the fresh egg not yet cold from the nest, that in the country you may eat while the hen is yet cackling in triumph at her great achievement; neither can you be sure, in town, that even your milk has not been in fraudulent proximity to the pump. In winter you are not warmed into good humor with all the world by a large, bountiful, *blazing wood fire*; nor can even Astor's countless millions buy for him, in town, the pleasure of being woke by the matin songs of joyous birds from the dreamless and refreshing slumbers that wait on rural exercises. For what amount of "base lucre" would the man of sensibility exchange the feelings that gladden his heart while he admires the flowers that ornament his breakfast table, and relishes and praises the well-made bread and the nice butter and the rich cream cheeses, that are the pride of his wife's or his daughters' management, and for which no such opportunity or reward is offered to the ambition of city wives and daughters?

True, it may be said we can exist without these small items of refreshment that go, too insensibly, to make up the sum of rural felicity; but if life itself is valued as it should be, for the opportunity it affords to be useful to our fellow men, and for the rational pleasures it brings, surely all these items should go to make up the account in favor of the country.

NINTH AGRICULTURAL MEETING.

THE PROFITS OF FARMING was still the order of last Tuesday evening, and animated statements were made by many of the speakers. Hon. Mr. STARKWEATHER, one of the Vice-Presidents, presided.

Mr. BROOKS of Princeton went into very minute particulars of outlay and income. He was speaking when we entered the Hall, and we lost some of his remarks, which we hope he will communicate for the first page of our next number.

Mr. Brooks estimated that 10 quarts of milk will make a pound of butter; that 10 quarts of skim-milk will make a pound of pork. The cost of keeping a cow well, a little over 50 dollars per year; and the value of her butter one or two dollars more than the keeping. He lets no cattle on to his mowing grounds. Then there was the calf and the manure in addition to the skim-milk. He counts his hay at 6 dollars a ton. Mr. B. said he could make 15 per cent. on all his capital engaged in farming, and he thought any farmer could do the same if he would manage well.

Hon. Mr. CLARK of Walpole said he had in later years been engaged in farming. Some of his land had cost him 60 and some 100 dollars per acre to get it into good grass. Some of his mowing is peat land and some is not. He sows his grass seed in September, and mows his fields three years without manuring; then plows and seeds down again on the furrow; puts no manure but ashes on his upland; prefers dry ashes. A man in Rhode Island purchases leached ashes at 17 cents per bushel, but he would not give it. Dry ashes kill his witch-grass and bring in clover. He thinks as much can be made in farming as in any other business. In his county one can make more than 25 per cent. by growing fruit. The porter apple and the winter pipin always bear a good price, and he had with these scions succeeded well in grafting trees that were 35 years old. One of his neighbors had done so well with fruit as to clear 100 per cent. He had cleared more than 200 dollars on one acre of peach trees.

Mr. BROOKS said, in answer to an inquiry as to selling hay, that he was obliged to use all his on his farm, for he could not buy manure if he would. *He had reclaimed some of his rocky pasture land at a cost of 100 dollars per acre, and he was paid for doing it.*

Hon. Mr. CALHOUN said he was much pleased to hear so much testimony in favor of the profits of farming both now and at former meetings. He hoped something would go forth from this place that would encourage young men to consider well their true and permanent interest. Too many men seem to think that farming is the last business to be thought of for profit. But compare the whole profit of farming with the profit derived from other pursuits, and you find that farmers, on the whole, succeed best. Let 100 men go into a city and trade; let 100 go

to farming, and at the end of 20 years the 100 farmers will be worth the most money.

It is ascertained that of 100 merchants who had done business on Long Wharf more than 90 became insolvent. So by a record kept at certain banking establishments, it was found that but very few who had done business died worth any property. So at the probate office it was found that 90 per cent. of the estates of traders prove insolvent. The records of the courts, too, will show that those who have taken advantage of the bankrupt act have not, on an average, made a dividend to the creditors of more than two or three per cent. Here are facts that we can resort to and rely upon. In my own observation I have found that systematic, prudent and diligent farmers always succeed.

Here is a foundation that may be built on with more certainty than any other. Yet young men are rushing into cities to make their fortunes. It is all important that the facts which have here been stated, now and at former meetings, should be deeply impressed on young minds. Mr. Brooks says 15 per cent. may be made on capital by any diligent and systematic farmer. Hon. John Lowell said 18 per cent. All this may be done by farming intelligently. He had wondered that farmers generally could get along so well as they actually do in their careless mode of farming. For himself, he had regained his own health by farming. The fresh open air had restored him. He repeated his pleasure on hearing the numerous statements of the profits that may be made in this business. One more consideration should have much weight. It had been truly stated by his venerable friend from Framingham, Major Wheeler, that this business naturally leads the mind to contemplation and to gratitude to the Ruler of the Universe, to whom farmers feel obliged to look for a blessing on their labors. No occupation so directly leads the mind to reflection on the works of creation. All that we eat, drink and wear comes from the ground. In every view this occupation is important.

But we have not yet devised a suitable system of agricultural education. We might easily furnish the means, in our common schools, of showing young men how to analyze soils and learn their different natures. Science should be brought down so as to be clearly understood in order to be useful. There is a bill now in the Legislature to furnish schools for adults. Let us have them for all classes. Minds run to waste. We quit school and are then permitted to think of nothing but hard work.

Major BENJAMIN WHEELER stated that out of 18 cases of bankruptcy, and 18 of insolvency, only one of the debtors was a farmer.

Hon. GEORGE DENNY of Westborough said: As to the statement of 90 and upward in the 100 failing in trade, he was aware that it was not generally believed, but it is true. He had had occasion to examine the records, which prove that out of 1112 persons whose

estates proved insolvent, only 14 were farmers; one of these was a lazy man, and another had been engaged in stage-driving and endorsed paper for his brother. A list from the office of the Secretary of the State would prove the small proportion of farmers who had become bankrupt. Every fourth man in the stores here could be dispensed with; yet numbers are continually rushing here to make their fortunes. No real farmer in this State has failed.

Capt. BENJAMIN PORTER of Danvers said: Not a farmer in Essex County has failed. I have been in trade, and I have been engaged in farming. I have been in debt, and have lain awake many a night to contrive how to take up my notes given in trade. I lost my health, but I have recovered it on my farm. I bought a farm that had been neglected, worn out, for \$1,500. It had numerous fruit trees, but it bore no fruit. I commenced by plowing and cross-plowing among the trees. I bought yearly 100 dollars' worth of manure, and on the third year I had 793 dollars' worth of apples. I had a sow that brought nine pigs. When these were sold they brought me 253 dollars. My trees very soon commenced bearing in consequence of breaking the sward. Farming is better than any kind of mechanic employment in Essex County.

There is the Howe Farm, on the Beverly town line, which has been leased out to half a dozen men; all have made money on it by having half the proceeds. Several of these men now own good farms. They purchased them by the profits of farming.

Mr. LINCOLN, a member of the House from Worcester, did not think money the sole object; he would not have a man "gain the whole world and lose his own soul." He had made farming profitable in one sense, but in no other: it affords a living for a man and his family, but he cannot become rich. The statement of the gentleman from Princeton, Mr. Brooks, is not satisfactory. Farms are generally incumbered with mortgages. Why is it that farmers are so generally in debt? Some individuals in large towns make a little money by tanning and other business off from the farm; but this is not farming. The same may be said of a few who have a chance to sell milk. But all farmers cannot sell milk. Let a farmer lay out \$3,000 in a farm. He will be obliged to economize. His clothing is less expensive than that of mechanics. By living very prudently he can hold his own, but he cannot lay up money. Mr. Lincoln would not have young men led astray by reports of these meetings. His object in speaking was to put people on their guard.

Mr. DENNY said there are two sides to every question. He was glad to hear the gentleman from Worcester. He hoped to hear in this place all the objections that can be stated to the profitability of farming. All of them are readily answered. Twenty years will show clearly who lays up the most

(1157)

money—farmers or those engaged in other pursuits.

Major WHEELER here offered some resolutions which were filed for action at the next meeting.

Mr. RUSSELL, a member, as we learned, from Worcester County, answered some queries proposed by Mr. Lincoln. I leased a farm worth \$3,000 at five per cent. The lessee told me he kept five cows on it and sold the *butter*; he did not sell milk. He supported his family on the farm and he laid up \$100 a year. He had seven daughters, and he brought them all up well educated. He left the farm in a good state.

The Gill Farm in Boylston, 600 acres, was rented for a number of years. The lessee retired with a handsome property. I have been in trade and I have been on a farm. I prefer farming.

Lieut. Governor REED expressed his high gratification in learning that farming is connected with so many good things. He thought we had an assembly here of the very best of farmers, and he wished to come again and hear more on the same subject.

Capt. E. WHEELER of Frammingham said he had served as a Deputy Sheriff for thirteen years, and though some of the traders there had failed in that time, not an individual whose occupation was farming had become insolvent.

Capt. PORTER named two farmers who went to Vermont several years ago; each bought a farm of 100 acres. In a few years one sold out for \$15,000, and the other had acquired a handsome property.

INSTINCT OF BIRDS.—When the lapwing wants to procure food it seeks for a worm's nest, and stamps the ground by the side of it with its feet, after the manner of boys in order to procure worms for fishing. After doing this for a short time the bird waits for the issue of the worm from the hole, which, alarmed at the shaking of the ground, endeavors to make its escape, when it is immediately seized and become the prey of this ingenious bird.

DUNG-HEAPS.—The temperature of a dung-heap is a pretty correct criterion of the state of fermentation. If a thermometer plunged into it does not rise above 100 degrees there is little danger of too much gaseous matter being lost; if the temperature is higher, means should be taken to check the fermentation.

GOOD PAY.—In Aberdeen the streets are swept every day, at an annual cost of £1,400, and the refuse brings in £2,000 a year. In Perth the scavenging costs £1,300 per annum, and the manure sells for £1,730. Here, then, is a gain of sterling gold—a premium for saving immortal life.

PRODUCTION OF SUGAR IN THE EAST INDIES.

THE April number of *Hunt's Merchants' Magazine* contains an interesting letter from J. Balestier, Esq., the United States Consul at Singapore, in the East Indies. The letter was not intended for publication, but was addressed to a planter in Porto Rico, and was forwarded, via New-York, to J. N. Balestier, a brother of the American Consul, who took the liberty of transcribing the material parts of it for publication in the *Merchants' Magazine*. Mr. Balestier has resided in Singapore since the year 1833, and is largely engaged in the business of sugar growing. His intelligence, as well as intimate acquaintance with the commercial and agricultural statistics of the East, entitle his statements to the utmost respect. The present communication relates to the prospective production of sugar, and embraces a sketch of the condition of sugar planting in Java, Cochin China, Siam, &c. It will be read with interest by our numerous subscribers in the sugar-growing region of the United States:

Extracts from the Letter of J. Balestier, Esq.

What with the reduction in the duties in England and America, and the prevailing spirit in the remainder of Europe for cheap sugars, the consumption must greatly increase; and as growers of the article are not prepared to supply this unexpected call, it would seem to follow that, for some years to come, prices will rather advance than decline. No part of America, except the United States, is in a condition to add much to the stock now raised.

There is abundance of first-rate soil, but a great scarcity of laborers; and without them the land has but little value. To this quarter—the eastern hemisphere, abounding in suitable soil and efficient hands—expectation is naturally turned to furnish the increased demand.

But there will be found great obstacles in the realization of this expectation, causing great disappointment. This eastern world, though possessed of unbounded soil and population, is wanting in capital and in enterprising Europeans, without which there can be no considerable addition to sugar production. The natives, left to themselves, are too much wanting in industrious habits, or in ambition of riches, ever to make good a deficiency in so costly and complicated a manufacture as that of sugar. Java, under its system of forced labor, is strained beyond prudence, as is proved by two successive years of famine brought on by turning the industry of that island from rice cultivation—the bread of that country—into other channels, such as indigo, tea, coffee and sugar. The Philippines, vast and rich in soil, are in the hands of pirates and Indians, and by law or habit are rendered unapproachable to foreigners beyond the limits of Manila, the Capital;

and although there is a yearly development of their productiveness, still they are far from being productive to the extent they would be were Europeans permitted to establish themselves in the interior, and turn the population to industrious habits by giving them adequate wages for their labor. China produces much sugar; but as their own consumption is great, and as they even import considerable coarse sugar from Cochin China and Siam, it would seem that no considerable surplus could be looked for from that quarter. Cochin China is in the hands of a despot, who reaps what his people are made to plant, they receiving, either in articles of food, clothing or money, what His Majesty is pleased to give them. Everything comes into his granaries for future disposal, and he alone exports, in his own ships, to this port and to Batavia, whatever is marketable—say about 20,000 piculs of ordinary sugar and some coffee. Siam is another of those vast countries where large quantities of sugar might be grown were it not for the cupidity of its sovereign. He of Cochin China, as I have said, obliges his people to sow, to enrich himself with the reaping, while his brother of Siam encouraged the immigration of colonies of Chinese into his States, to obtain a revenue from the rich alluvial wastes which his own subjects had not energy and industry to cultivate. The Chinese paid a regular fixed rent for their allotments, and their production of sugar greatly increased. But an unlooked-for purchaser made his appearance. Hitherto the Chinese had been free to sell their crops to the highest bidder; but now the King's emissaries demanded the delivery of the sugar at a price fixed by himself, and which, being less than the market value, leaves to his merchant majesty a hand-

some profit on the sales to foreigners. That proceedings so arbitrary should check the manufacture is the natural consequence; and Siam, therefore, will not, for the present, lend a helping hand in replenishing the warehouses of the West with sugar.

I have given you a rapid and, I believe, a correct survey of the capabilities of the principal sugar lands in the East, to meet the new wants expected to arise from a less burdensome tax upon the consumer.

The time, however, will come—must come—when the world will be amply supplied with this article. British India, and the British possessions in the Straits of Malacca, are in a better condition to become producers on a larger scale than any other region. I have already said, in the first part of this letter, that there is abundance of soil and of laborers, but that capital and adventurers were wanting. This is true at present; but will it be so long, after the stability of this branch of industry shall be well established? For many years past, vacillating policies and Tariffs have given anything but security to those engaged in the business of growing sugar; and the consequence has been that capitalists have been unwilling to lend money to carry on or establish an industry universally considered hazardous, except on such onerous conditions as made the unfortunate borrower a bonded slave for life.

The new policy of Governments, which, by the imposition of moderate duties, encourages consumption, gives that stability and security so much wanted, and will lead capital to flow in that channel. That great obstacle removed, adventurers from the West will not be wanting in the plains of over-populated India. Money, obtained at a moderate rate of interest, will enable them to form plantations, and raise and export sugar cheaper than from any other quarter of the globe, unless these shores (the Straits of Malacca), jutting out from India and China, whose population is the densest in the world, should prove an exception.

The shores of the Malaya Peninsula, along the Straits of Malacca, have far greater advantages for the growth of sugar-cane than any portion of British India. The whole extent of country is perfectly healthful to European, Chinese, Indians or aboriginal Malays. In its whole extent it is exempt from any of those terrific and destructive atmospheric convulsions, such as hurricanes, typhoons, or even gales; squalls, only, are occasionally experienced. Its surface is diversified by high mountains and rich valleys, and plains almost interminable, all indicating, by the luxuriant fruit which overspreads them, the fertility of the soil. Large navigable rivers and other water-courses indent the coast, by which the greatest facility would be had in communicating with the interior. Its mineral wealth, in gold, iron, lead, and particularly in tin, is great.

This peninsula, with upward of 500 miles

of seacoast, with the exception of the three small settlements, viz: Singapore, Malacca and Penang, or Prince of Wales Island, is a waste.

Possessing such eminent advantages, what is not that waste capable of becoming, with capital at command and cheap labor from India and China close at hand? Nothing is wanting but confidence in the business of raising sugar, to give such an impulse to it within the possessions of the East India Company, as shall fully meet the probable increased wants of the European and American populations.

Receive, then, my friendly congratulations on what appear to me just-founded prospects of good prices for some years to come; but at the same time make the most of that warning which the untold millions of vacant cane lands, and the untold millions of the free and efficient hands of India—at an average of two Spanish dollars per month, enduring everything—give you. Will you be ready to compete with good sugar, the cost of which, to the manufacturers, shall not exceed one penny sterling, or two cents per pound? There are not those wanting—experienced men in the business—who are ready to prove that, with the plow and steam for helpmates—that is, with improved implements and skill—sugar, nearly white, can be turned out at two cents per pound.

GOD SAVE THE PLOW.

SEE, how the shining share
Maketh Earth's bosom fair,
Crowning her brow.
Bread in its furrow springs,
Health and repose it brings,
Treasures unknown to kings—
God save the plow!

Look to the warrior's blade,
While o'er the tented glade
Hate breathes his vow;
Strife its unsheathing wakes,
Love at its lightning quakes,
Weeping and woe it makes—
God save the plow!

Ships o'er the deep may ride,
Storms wreck their bannered pride,
Waves whelm their prow;
But the well-loaded wain
Garnereth the golden grain,
Gladdening the household train—
God save the plow!

Who are the truly great?
Minions of pomp and state,
Where the crowd how?
Give us hard bands and free,
Culturers of field and tree,
Best friends of Liberty—
God save the plow!

☞ A fossil cherry tree was lately discovered in a bed of sandstone, in the Isle of Wight, 200 feet below the level of the earth.

SCRAPS.

INFORMATION WANTED BY THE EDITOR OF THE FARMERS' LIBRARY.—The names of the Chairman and members of the two branches of the Legislatures of the several States, who composed, at their last meeting, the Committees on Agriculture and on Education; and particularly copies of their *Reports* on these subjects. Also printed copies, if to be had, of the Governor's Messages, to see in what terms these two great objects of public interest were referred to.

This request is particularly addressed to the Clerks of the two Houses of the Legislature. The object is the advancement of the public welfare, as far as it depends, as assuredly it does, on improved Education and improved Agriculture, more than on all other earthly concerns.

Where no answer is received it will be reluctantly inferred, though scarcely to be believed, that no Report was made. In such case it is yet more proper that the people should know who of their Representatives were charged with these subjects.

ALDERNEY CATTLE.—MR. COLT of Paterson, who has already the largest herd of pure Alderneys that we know of, has written to ask Mr. Colman to procure for him, from the Island of Jersey, a choice Alderney cow and bull of the purest stock.

They have paid more attention to this breed of cattle there, it is said, than anywhere else—so much so that the importation of a bull that might stain it with impure blood is strictly prohibited. From this small district it is said that 4,000 cows are annually exported to England to supply the lovers of pure and rich milk and cream with a luxury such as none but Alderneys can yield in such perfection.

THE IRISH IN AMERICA. it is ascertained, send to their poor relatives in Ireland more than a million of dollars a year.

"La Démocratique Pacifique" contains an account of an orang-outang on board the Hull, bound from Sumatra to Rotterdam. The animal had attained so high a degree of civilization that he would never sleep without his night-cap!

"Nero fiddled while Rome was burning."

It is said that never since the establishment of horse-racing in England have there been so many horses in training as there are at present. (1160)

SOAP AS A MANURE.—T. Dalton, a silk dyer, says, in the London Agricultural Gazette, that he uses 15 cwt. of soap weekly to discharge the oily matter from the milk, and forming of itself a kind of soap, the whole of which yields from four to six thousand gallons of strong soap-suds per week. This he has lately applied to his farm, and "its effects are most extraordinary." It has been used only one season, and its results cannot be accurately given; but he considers it more powerful than any other manure.

[Southern Planter.

Many barrels of strong soap-suds are annually thrown into the gutter and run to waste from every farmer's laundry. Could not these be poured on the manure heap, or otherwise saved to increase his "bank," and thus help to obviate the necessity of purchasing foreign manures?

[Farmers' Cabinet.

In the Ohio Cultivator we find a communication signed by RICHARD HAINES, of Montgomery Co. Ohio, bearing date March 10, 1847, in which are furnished the following details:

A LOT OF LARGE HOGS.—Mr. H. has raised and fattened, the past season, on his farm (by Nehemiah Gaskill), a lot of 22 hogs, the weight of which is somewhat extraordinary. They were a cross of the Berkshire and Russia breeds; were slaughtered, when only 19 months old, by Mr. Bimm, of Dayton, and the following is the record of the weight of each: 528, 521, 514, 506, 505, 504, 486, 478, 420, 416, 455, 430, 457, 415, 468, 480, 457, 430, 430, 447, 432, 408, 435: Total, 10,222 lbs.

If any can beat this, Mr. Haines would like to hear from them.

At a meeting of the Executive Committee of the New-York State Agricultural Society, on the 4th of April, the Secretary reported that in 19 Counties of this State the yield of Indian corn exceeded 80 bushels per acre; in 11 counties, crops were stated to exceed 100 bushels. The largest yield in Cortland County was 154 bushels; in Oswego, 146; in Orange, 139; in Tioga, 125; and in Oneida, 123 bushels. The largest yield of wheat reported was in Ontario, a fraction short of 60 bushels to the acre on upward of two acres. In eight Counties the yield of oats exceeded 70 bushels per acre; the largest crop was 102 bushels, in Oneida.

[This, of course, refers to *premium crops*. We should like to know whether the whole acre was shelled and measured, and how, and at what season, &c.]

Plants, like living animals, require certain descriptions of food to bring them to a natural state of perfection, and the individual who studies Nature's laws in the management of his crops, and attends rigidly to their requirements, can scarcely fail in being a successful cultivator

SEX OF FLOWERS.—Temperature has a great influence over the sex of flowers produced by a given plant. A very high temperature caused a watermelon to bear male blossoms only; and a very low temperature made cucumber plants produce female flowers alone.

Mr. Knight had little doubt that the same fruit stalks might be made in the plants first noticed, to support flowers of either sex, in obedience to external causes.

CONSTITUTIONS OF AGRICULTURAL CLUBS AND SOCIETIES.—It is highly gratifying to see that these associations are multiplying fast, all over the country. We are sometimes inquired of, for sketches of constitutions. The simpler the form of these the better. Only let five or six zealous farmers get together, "any way they can fix it," and the association will model itself. There is truth in the French proverb,

"*Dieu donne fil a toute ourdie.*"

In the mean time we will thank any of the secretaries who have printed forms at hand, and to spare, to send us copies, for the information of those wishing to get up such societies. From various forms, one may be arranged to suit the differing circumstances of various localities.

MORE GOOD SIGNS.—We have pleasure to learn by our correspondence, that gentlemen of intelligence and influence in and about Winchester, Virginia, are anxious for the establishment there of a good agricultural training school. There could not be found in the Union a more inviting and eligible locality. It will be an indelible reproach to that and all other States that may neglect to establish *Normal Schools* as nurseries for rearing instructors to supply the establishments which the public sentiment will soon be calling for in all parts of the United States.

✍ Mr. Youatt, the eminent veterinarian, author of the "Treatise on the Horse," and other works of a like nature, committed suicide by taking poison. [London Farm. Mag.]

✍ Mr. James Gardiner, the inventor and maker of the celebrated turnip-cutter, died on the 26th of December, at Banbury.

Why should not honorable obituary notice be taken of all useful inventors and writers, as well as of politicians and warriors of high and of low degree?

IRISH POTATOES.—In an early number we shall tell how to raise varieties from the seed; and, what many will think of more immediate importance, how to cook them; for many a wise man would be at a loss *how to boil a potato!* The French calculate about sixty different modes of dressing them, and of dressing eggs. We shall give a few of the simplest.

(1161)

THE WESTCHESTER SOCIETY'S Constitution very wisely provides that there shall be a "Farmers' Club" established in each town of the county, composed of the Vice-President, Board of Town Managers, and the members of the (county) Society of each town respectively.

These Farmers' Clubs, where they have the zeal to meet frequently and give in their experience, are of more real utility than County Societies with their once a-year meeting and exhibition for a day—all hurry and bustle, and off again.

CATTLE IMPORTED BY THE MASSACHUSETTS AGRICULTURAL SOCIETY.—The clear and interesting account of this recent importation of Ayrshire and North Devon cattle, prepared by Mr. PHINNEY on behalf of that exemplary Society, has been copied from THE FARMERS' LIBRARY into a new, well managed and improving English agricultural journal, "THE PLOW," to which we are indebted for the article on the Philosophy of Fattening Cattle, and for other items and essays of much value.

WHEAT.—The best is said to contain about three-fifths of starch and two-fifths of gluten, and on the due proportion of these two substances in flour the goodness of the brand depends. Hence it is said that to insure the best bread it is expedient to mix the flour of different wheats together.

RELATIVE VALUE OF FOOD FOR CATTLE.—100 lbs. of good meadow hay are about equal to 500 of Swedes, 500 of mangel-wurzel, 450 of carrots, 700 to 800 of common turnips, or perhaps 400 of parsnips.

KEEPING EGGS.—The Editor of the Boston Cultivator recommends, from trial, the following: Put into the cask a layer of plaster of Paris, first covering the bottom of the cask with plaster, and then alternate layers of each in such a manner that one shell shall not touch another. He states that he has kept them in this manner a year perfectly good.

The following mode of keeping has been patented in England, and extensively used in this country: 1 bushel quick-lime; 2 lbs. salt; $\frac{1}{2}$ lb. cream of tartar. Mix the same together with as much water as will reduce the composition to a consistency that an egg when put into it will swim. It is said that eggs have been kept in this way sound for two years.

THE SCAB ON SHEEP.—Lowe, in his work "On Practical Agriculture," gives the following directions for the cure of scab: "A decoction of tobacco and spirit of turpentine, with the addition of a little soft soap and sulphur vivum. The decoction of tobacco may be obtained by boiling the tobacco in brine or salt water. The liquid, when prepared, is applied from a vessel like a tea-pot with a spout, or from a bottle with a quill passed through the cork. Lay the wool back in lines, so as to expose the skin, and pour out the liquid along the lines upon the skin."

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